

MICROCOPY RESOLUTION TEST CHART NATIONAL BUREAU OF STANDARDS-1963-A



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Corps of Engineers





Reservoir Control Center

(Instream Flow Study)

APPENDIX A TO PART III OF THE

ANNUAL REPORT 1980

USArmy Corps of Engineers Southwestern Division Dallas, Texas

January 1981

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Water quality Stream measurements	
Flood forcasting	need from terms of Engineer
This report presents activities and accomplishments Division (SWD), related to reservoir regulation and FY 1980. Companion publications, Parts II and III have been prepared containing detailed summaries of coordinating committee meetings, and instream fievaluation, respectively.	water managraent through I of the "Annual Report", I the districts, and minutes low problems and meeds

APPENDIX A RESERVOIR CONTROL CENTER 1980 ANNUAL REPORT

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Dist win this	
A-1	



PART I

TABLE OF CONTENTS

SECTION	I - INTRODUCTION	Page
1.	PURPOSE OF REPORT	I-1
2.	REFERENCES	1-1
3.	OBJECTIVES OF RESERVOIR CONTROL CENTER	I-1
SECTION	II - WATER CONTROL ACTIVITIES IN SWD	
1.	RESERVOIR REGULATION	II-1
	a. LAKE REGULATION IN FY 80	II-1
	b. REGULATION PLANS	II-2
2.	SWD WATER QUALITY PROGRAM AND ACTIVITIES	
•	a. RESPONSIBILITIES	11-4
	b. ORGANIZATION	11 - 4
	c. SPECIAL ACTIVITIES IN FY 80	II - 5
	d. LONG-TERM GOALS	II-6
	e. IMMEDIATE GOALS	II-6
3.	SWD SEDIMENT PROGRAM AND ACTIVITIES	II-8
4.	DATA COLLECTION AND MANAGEMENT	II-9
	a. STREAM GAGING PROGRAM	II-9
1	b. COOPERATIVE REPORTING NETWORKS	II-9
	c. CURRENT MONITORING SYSTEM	II-9
	d. WATER CONTROL AUTOMATED DATA SYSTEM	II-10
	e. COOPERATIVE DATA BANK AND FORECASTING ACTIVITY	TT-11

PART I

TABLE OF CONTENTS (CONTINUED)

SECTION	II - WATER CONTROL ACTIVITIES IN SWD (CONTINUED)	Page
5.,	COORDINATION WITH WATER MANAGEMENT INTERESTS	
	a. INTERNAL	II-12
	b. OTHER AGENCIES	II-12
6.	INSTREAM FLOW PROBLEMS AND NEEDS EVALUATION EC 1110-2-214	II-15
SECTION	III - FACILITIES AND PERSONNEL	
1.	FACILITIES	III-1
	a. OFFICE SPACE	III-1
	b. DISPLAY	III-1
	c. COMMUNICATION EQUIPMENT	III-1
2.	PERSONNEL	III-1
	a. STAFF	III-1
	b. TRAINING	III-1
	c. TREND OF DISTRICT RESERVOIR REGULATION STAFFING	III-2
	ADDENDA	
MINUTES	OF RCC ANNUAL MEETING	Add No. 1
MINUTES	OF WATER QUALITY MEETING	Add No. 2
MINUTES	OF HES ANNUAL MEETING	Add No. 3

PLATE

DAMS AND RESERVOIRS IN THE SOUTHWESTERN DIVISION

Inside Front Cover

PART II

SECTION IV - STATUS OF RESERVOIR WATER CONTROL MANUALS IN SWD

SECTION V - REGULATION OF MULTI-PURPOSE PROJECTS WITH HYDROPOWER

SECTION VI - DISTRICT WATER CONTROL ACTIVITIES

- 1. SPECIAL RESERVOIR OPERATION
- 2. WATER QUALITY PROGRAM AND ACTIVITIES
- 3. SEDIMENT PROGRAM AND ACTIVITIES
- 4. COOPERATIVE PROGRAMS
- 5. INSTREAM FLOW STUDY

SECTION VII - RESERVOIR DATA SUMMARY

- 1. SWD MAP
- 2. INDEX BY BASINS
- 3. INDEX IN ALPHABETICAL ORDER
- 4. DATA TABLES

SECTION VIII - MINUTES OF MEETINGS OF BASIN INTERESTS GROUPS

- 1. ARKANSAS RIVER BASIN COORDINATING COMMITTEE
- 2. TRINITY RIVER BASIN WATER MANAGEMENT INTERESTS GROUP

PART III

SECTION IX - INSTREAM FLOW STUDY

- L. SUMMARY OF INSTREAM FLOW PROBLEMS AND NEEDS
- 2. DETAILED PROJECT EVALUATION OF INSTREAM FLOW PROBLEMS AND NEEDS
- 3. MONTHLY DISCHARGE FREQUENCY AND DURATION CURVES

APPENDIX A

MONTHLY DISCHARGE FREQUENCY AND DURATION CURVES

SECTION IX - INSTREAM FLOW STUDY

1. Summary of Instream Flow Problems and Needs. The instream flow problems and needs evaluation program established by OCE is in response to President Carter's 12 July 1978 memorandum on "Environmental Quality and Water Resources Management". The EC directs all field operating activities having civil works projects responsibilities to conduct a project evaluation of all existing Corps of Engineers water resources projects. The evaluations will be used to assess the magnitude of existing instream flow related problems and needs, the potential cost necessary to meet the identified needs, the opportunities to enhance instream flow affected to accomplish necessary actions. Criteria for the evaluations are contained in EC 1110-2-214 and with further guidance provided by SWDED-XR letter dated 18 August 1980 (Appendix A).

The Southwestern Division Office established a program in mid 1978 to determine minimum flow requirements for fish and wildlife purposes below Corps projects. Several problem areas were determined. Minimum flows were initiated at several projects as a result of that program. Another result was the initiation of studies of several other projects to determine the need for minimum flow and the magnitude of those flows. The Southwest Division has been working with the US Fish and Wildlife Service in an attempt to arrive at a mutually acceptable solution to these problems within present operational constraints. Some of the quantity information required by the EC had therefore been compiled.

The instream flow evaluation program within Southwestern Division has resulted in the evaluation of 84 of the 93 projects. Those omitted are eight low lift navigation structures on the main stem of the Arkansas River and one on the Arkansas Post Canal. These projects have no apparent water quality or water quantity problems associated with project regulation. Low flows on the main stem of the Arkansas River are controlled by hydropower operations at upstream storage and run of river projects. Release requirements are set at the Dardanelle power station which results in adequate minimum flows downstream except under extreme drought conditions.

The number of projects to be evaluated varied tremendously between districts with Galveston District having only two projects to evaluate while Tulsa District had 44. The amount of detail included also varies from district to district. Little Rock and Fort Worth Districts presented a considerable amount of detail on most projects. Tulsa District, due to the large number of projects, grouped projects according to reservoir size and depth, location and outlet works configuration with generalized descriptions for the water quality portions plus known specific problems for individual projects. Of those evaluated about twenty within SWD were described as having no water quality problems or at least none noted to date. Most of these are low lift locks and dams along the McClellan-Kerr Arkansas River Navigation Project. Others are small flood control and conservation projects that do not stratify or if they do it is a mild stratification that is easily broken up by wind action.

Eight projects are currently being studied as part of larger more comprehensive basin restudies or site specific studies to address known high profile problems. Three site specific studies are at Lake Texoma (Denison Dam), Sam Rayburn Dam and Table Rock Dam. These three have been identified by state agencies as having low dissolved oxygen in their releases. An additional study is proposed for Lake Texoma.

Quantity wise, numerous projects have no or extremely low releases for extended periods of time. In appropriated rights states (Texas and New Mexico) most releases, other than for flood control, are made at the request of compact commissions or other state or local agencies having rights to the stored or inflowing waters. Therefore, in most cases, the Corps has no authority to release conservation water for other uses. Even in other states much of the conservation storage is under contract to local governmental agencies and therefore cannot be used to enhance downstream areas.

Twenty projects were identified as having problems severe enough that the districts recommended studies to determine the extent of the problem and alternative solutions. Seven of these are water quantity problems identified by the US Fish and Wildlife Service. The others are water quality problems generally associated with deep stratified impoundments with low level outlets. They are generally low dissolved oxygen, high temperature in trout fisheries, hydrogen sulfide, iron, manganese or pH. Many other reservoirs screened in this program had similar problems but they are not as severe as those indicated.

Table 1 shows projects where studies are recommended including priorities and funding requirements.

PROJECT	PRIORITY	<u>FUNDS</u>
Tenkiller Ferry	1	\$30,000
Lake Texoma (Denison Dam)	2	50,000
Sommerville	3	50,000
Nimrod	4	35,000
Keystone	5	30,000
Oologah	6	30,000
Wister	7	20,000
Blue Mountain	8	15,000
Eufaula	9	15,000
Broken Bow	10	15,000
Lavon	11	60,000
Bardwell	12	60,000
Navarro Mills	13	55,000
Proctor	14	55,000
Belton	15	50,000
Stillhouse	16	55,000
Clearwater	17	10,000
Hugo	18	15,000
Greers Ferry	19	20,000
Pine Creek	20	15,000

The Southwestern Division evaluation process required a large expenditure of resources which due to the time frame involved had to be diverted from other programs. These programs are being rescheduled as quickly as manpower and funding allow. The evaluations are, in some instances, the first comprehensive look at problems encountered at the projects. In some districts personnel from Hydraulics, Planning, Operations and project personnel cooperated in the effort to identify all known problems. We feel that this study evaluation will serve as basis for future work to improve the quality and quantity of releases from SWD projects.

- 2. <u>Detailed Project Evaluation of Instream Flow Problems and Needs</u>. Narratives describing detailed evaluations for individual projects are contained in this volume. An index is shown on pages 4a through 4e.
- 3. Monthly Discharge Frequency and Discharge Duration Relations. Monthly discharge frequency and discharge duration curves are included in Appendix A for those projects that were evaluated. Projects are in the order shown on pages 4a and 4b.

INSTREAM FLOW PROBLEMS AND NEEDS EVALUATION INDEX

	INSTREAM FLO	W PROBI	LEMS AND	NEEDS E	VALUATION	INDEX			
							CAPA		
				YR	POOL ELE			O AF	PAGE
LAKE NAME	STREAM	DIST	STATE	COMP	CONS	FC	CONS	FC	NO
Introduction									Ī
		WH	ITE RIVE	R BASIN					
Beaver	White	LKD	AR	66	1120.0	1130.0	1652	300	5
Table Rock	White	LRO	AR/MO	58	915.0	931.0	2702	760	526
Bull Shoals	White	LRD	AR/MO	52	654.0	695.0	3048	2360	15
Norfork	North Fork	LRD	AR/MO	45	552.0	580.0	1251	732	26
Clearwater	Black	LRD	MO	48	494.0	567.0	22	391	36
Greers Ferry	Little Red	LRD	AR	62	461.0	487.0	1911	934	44
		ARK	ANSAS RIV	VER BASI	N				
Pueblo	Arkansas R	AD#	00	74	4880.6	4898.7	264	93	
Trinidad	Purgatoire R	AD	œ	78	6226.4	6260.0	64	58	55
John Martin	Arkansas	AD	œ	51	3851.0	3870.0	351	270	57
Cheney	N F Ninnescah	TD*	KS	64	1421.6	1429.0	167	81	٠.
Eldorado	Walnut	TD	KS	80	1339.0	1347.5	157	79	59
Kaw	Arkansas	סד	OK/KS	76	1010-0	1044.5	429	919	64
Great Sait Plains	Salt Fork Ark	TD	OK	41	1125.0	1138.5	31	240	70
	Arkansas	סד סד	OK	64	723.0	754.0	618	1219	70
Keystone				50		_			
Heyburn	Polecat Cr	סד	OK		761.5	784.0	7	48	86
Toronto	Verdignis R	סד	KS	60	901.5	931.0	22	178	94
Fall River	Fall	TD	KS	49	948.5	987.5	24	235	102
Elk City	Elk	סד	KS	66	792.0	825.0	34	256	110
Big Hill	Big Hill Cr	TD	KS	81	858.0	867.5	27	13	120
0o logah	Verdigris R	TD	OK	63	638.0	661.0	553	966	125
Hulah	Caney	TD	OK/KS	51	733.0	765.0	36	258	136
Copan	L Caney	TD	OK/KS	80	710.0	732.0	43	184	146
Birch	Birch Creek	TD	OK	79	750.5	774.0	19	39	151
Sklatook	Hominy Creek	TD	OK	82	714.0	729.0	305	182	156
Newt Graham LD 18	Verdigris	TD	OK	70	532.0	-	24	0	161
Chouteau LD 17	Verdigris	TD	OK	70	511.0	-	23	0	163
Council Grove	Neosho R	TD	KS	65	1270.0	1289.0	38	76	165
Marion	Cottonwood R	TD	KS	68	1350.5	1358.5	86	60	175
John Redmond	Neosho R	TD	KS	64	1039.0	1068.0	82	563	189
Grand Lake	Neosho (Grand)	TD*	OK	40	745.0	755.0	1672	525	
Lake Hudson	Neosho (Grand)	TD*	OK	64	619.0	636.0	200	244	
Fort Gibson	Neosho (Grand)	ΤD	OK	52	554.0	582.0	365	919	198
Webbers Falls LD 16	Arkansas	TD	OK	70	490.0	20240	165	0	208
Tenkiller Ferry	Illinois R	TD	OK	52	632.0	667.0	654	577	210
Conchas	Canadian R	AD .	NM	39	4201.0	4218.0	330	198	221
Mered ith	Canadian R	~υ πο≠	TX	65	2941.3	2965.0	945	463	44 1
Thunderbird	Little R	TD*	ΤX	65	1039.0	1049.4	120	7 03	
			OK	78	2763.5	2779.0	129	101	227
Optima	N Canadian R	TD TD		42					223
Fort Supply	Wolf Cr	ΤD	OK ~~		2004.0	2028.0	14	87 260	228
Canton	N Canadian R	π	OK ~~	48	1615.2	1638.0	116	268	234
Eufaula	Canadian R	סד	OK	64	585.0	597.0	2329	1470	242
R S Kerr LD 15	Arkansas	π	OK	70	460.0	-	494	0	251
W D Mayo LD 14	Arkansas	π	OK	70	413.0	-	16	0	253
Wister	Poteau R	TD	OK	49	471.6	502.5	27	400	255
LD 13	Arkansas	LRO	AR/OK	69	392.0	-	. 54	0	
Ozark-J T LD 12	Arkansas	URD	AR	69	372.0		148	0	504
Dardanelle LD 10	Arkansas	LRO	AR	64	338.0	-	486	0	511
Blue Mountain	Petit Jean	LRD	AR	47	384.0	419.0	25	233	266
LD 9	Arkansas	LRD	AR	69	287.0	-	65	0	
Toad Suck Ferry LD 8	Arkansas	LRD	AR	69	265.0	-	35	0	
Nimrod	Fourche La Fave	LRD	AR	42	342.0	373.0	29	307	273
Murray LD 7	Arkansas	LRD	AR	69	249.0	-	87	0	
D D Terry LD 6	Arkansas	LRO	AR	68	231.0	-	50	0	
LD 5	Arkansas	URD	AR	68	213.0	-	65	0	
LD 4	Arkansas	LRD	AR	68	196.0	-	70	0	
LD 3	Arkansas	LRD	AR	68	182.0	-	46	0	
LD 2	Arkansas	LRD	AR	67	162.0	•	110	0	519
LD 1	Arkansas	LRD	AR	67	142.0	-	2	0	

Section 7 Flood Control Projects includes dead storage, conservation, water supply, power, irrigation, etc.

		R	ED RIVER	BASIN					
Altus	N F Red	TD# _	OK	46	1559.0	1562.0	141	21	
Tom Steed	W Otter Creek	TD*	OK	75	1411.0	1414.0	96	20	
Lake Kemp	Wichita R	TD*	TX	77	1144,0	1156.0	299	225	284
Waur I ka	Beaver Creek	TO.	OK	78	951.4	962.5	203	140	290
Fost Cobb	Wash ita	TD*	OK OK	61	1652.0	1668.6	256	181	
Fort Cobb Arbuckie	Cobb Creek	TD*	OK	59	1342.0	1354.8	78	64	
Lake Texama	Rock Creek Red	TD*	OK TX/OK	67	872.0	885.3	72	36	
Pat Mayse	Sanders Creek	םד סד	TX	45 68	617 . 3 451 . 0	640.0 460.5	2836 124	2660	299
Hugo	Klamichi R	סד סד	OK.	74	404.5	437.5	157	65 809	310 317
Pine Creek	Little R	TD	OK	69	443.5	480.0	78	388	322
Broken Bow	Mountain Fork	מד	OK	69	599.5	627.5	919	450	331
DeQueen	Rolling Fork	TD	AR##	77	437.0	473.5	35	101	342
Giliham	Cossatot	TD	AR**	76	502.0	569.0	33	189	348
Dierks	Saline R	TD	AR##	76	526.0	557.5	30	67	355
M11 I wood	Little R	TD	AR	66	259.2	287.0	207	1653	362
Wright Patman	Sulphur River	FWD	TX	56	220.0	259.5	143	2509	368
Lake 0 the Pines	Cypress Creek	FWD	TX	60	228.5	249.5	251	580	375
			BIUS						
Sam Rayburn	Annalia - O		CHES RIVE		_	.== 4	***		
B A Steinhagen	Angelina R Neches R	FWD	TX TX	65	164.4	173.0	2898	1009	380
D v 214 i i i nagen	Meches K	FWD	TX	51	81.0	83.0	70	24	386
•		TRI	NITY RIVE	R BASII	N				
Benbrook	Clear Fork	FWD	TX	52	694.0	724.0	88	170	391
Lewisville	Elm Fork	FWD	ΤX	54	515.0	532.0	465	525	398
Grapev Ine	Denton Cr	FWD	TX	52	535.0	560.0	189	248	403
Lavon	East Fork	FWD	TX	77	492.0	503.5	457	277	408
Navarro Mills	Richland Cr	FWD	TX	68	424.5	443.0	63	149	414
Bardwell	Waxahachie Cr	FWD	TX	65	421.0	439.0	55	85	420
		CAN I	ACINTO RI	VED DA	CIM				
Barker	Buffalo Bayou	GO GO	TX	45	<u> </u>	107.0	0	207	426
Addicks	Buffalo Bayou	eo S	ΤX	48	-	114.0	0	207	429
,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	5511410 55755	•	10	40	_	117.0	•	205	747
	_		AZOS RIVE						
Whitney	Brazos	FWD	TX -	51	533.0	571.0	627	1372	432
Waco	Bosque	FWD	TX	65	455.0	500.0	153	574	438
Proctor	Leon R	FWD	TX	63	1162.0	1197.0	59	315	443
Belton Still Duse H	Leon R	FWD	TX	54	594.0	631.0	458	640	449
North Fork	Lampasas R N F San Gabriel	FWD FWD	TX TX	68 79	622.0	666.0	236	395	455
Granger	San Gabriel R	FMD	TX	79 79	791.0 504.0	834.0	37 66	93 179	461 466
Somerville	Yegua Cr	PWD	TX	67	238.0	528.0 258.0	160	347	400 471
	900 01		10	٠,	250,0	20,0	100	<i>3</i> =1	7/1
			ORADO RIV		<u>IN</u>				
Twin Buttes	S&M Concho R	FWD*	TX	63	1940.2	1969.1	186	454	
0 C Fisher	N Concho R	FWD	TX	52	1908.0	1938.5	119	277	478
Hords Cr	Hords Cr	FWD	TX	48	1900.0	1920.0	9	17	482
Marshall Ford	Colorado R	FWD*	TX	40	681.0	714.0	1172	780	
		GUADA	ALUPE RIV	ER BAS	IN				
Canyon	Guada I upa R	FWD	TX	64	909.0	943.0	386	355	487
		P	IO GRANDE	RACIN					
Platoro	Conejos R	AD# [*]	00	51	10027.5	10034.0	54	6	
Abiquiu	Rio Chama	AD	NM	63	•	6283.5	Õ	568	492
Cochiti	Rio Grande	AD	NM	75	5321.45	5460.5	47	539	494
Galisteo	Galisteo Cr	AD	NM	70	-	5608.0	0	90	496
Jemez Canyon	Jemez R	AD	NM	53	5160.0	5232.0	2	104	498
Los Esteros	Pecos R	AD	NM	80	4776.5	4797.0	267	182	500
Sumner	Pecos R	AD#	NM	37	4261.0	4282.0	47	86	
Two Rivers	Rio Hondo	AD	N M	63	-	4032.0	0	168	502

^{**} These projects transferred to Little Rock District | Oct 80.

ALPHABETICAL INDEX

PROJECT NAME	RIVER BASIN	PAGE NO.
Abiquiu	Rio Grande	492
Addicks	San Jacinto	429
Al tus	Red	
Arbuckle	Red	
B A Steinhagen	Neches	386
Bardwell	Trinity	420
Barker	San Jacinto	426
Beaver	White	5
Belton	Brazos	449
Benbrook	Trinity	391
Big Hill	Ar kansas	120
Birch	Arkansas	151
Blue Mountain	Ar kansas	266
Broken Bow	Red	331
Bull Shoals	White	15
Canton	Arkansas	234
Canyon	Guadalupe	487
Cheney	Arkansas	
Chouteau LD 17	Ar kansas	163
Clearwater	White	36
Cochiti	Rio Grande	494
Conchas	Arkansas	221
Copan	Ar kansas	146
Council Grove	Arkansas	165
D D Terry LD 6	Ar kansas	
Dardanelle LD 10	Arkansas	511
Denison Dam (Lake Texoma)	Red	299
DeQueen	Red	342
Dierks	Red	355
Eldorado	Arkansas	59
Elk City	Ar kansas	110
Eufaula	Arkansas	242
Ferrells Bridge Dam (Lake O' the Pines)	Red	375
Fall River	Arkansas	102
Fort Cobb	Red	
Fort Gibson	Arkansas	198
Fort'Supply	Ar kansas	228
Foss	Red	
Galisteo	Rio Grande	496
Garza-Little Elm Dam (Lake Lewisville)	Trinity	398
Gillham	Red	348
Grand Lake O' the Cherokees (Pensacola Dam)	Arkansas	
Granger	Brazos	466
Grapevine	Trinity	403
Great Salt Plains	Ar kansas	70
Greers Ferry	White	44

PROJECT NAME	RIVER BASIN	PAGE NO.
Heyburn	Arkansas	86
Hords Creek	Colorado	482
Hudson (Lake Hudson) Markham Ferry Dam	Arkansas	
Rugo	Red	317
Hulah	Arkansas	136
Jemez Canyon	Rio Grande	498
John Martin	Arkansas	57
John Redmond	Arkansas	189
Kaw	Arkansas	64
Kemp, Lake	Red	284
Keystone	Arkansas	77
Lake O the Pines	Red	375
Lavon	Trinity	408
Lewisville (Garza-Little Elm Dam)	Trinity	398
Lock & Dam 18 (Newt Graham)	Arkansas	161
Lock & Dam 17 (Chouteau)	Ar kansas	163
Lock & Dam 16 (Webbers Falls)	Arkansas	208
Lock & Dam 15 (Robert S. Kerr	Ar kansas	251
Lock & Dam 14 (W. D. Mayo)	Ar kansas	253
Lock & Dam 13	Ar kansas	233
3337 - 142 - 1	Ar kansas Ar kansas	504
Lock & Dam 12 (Ozark - Jeta Taylor)	Ar kansas Ar kansas	511
Lock & Dam 10 (Dardanelle)	Arkansas Arkansas	311
Lock & Dam 9		
Lock & Dam 8 (Toad Suck Ferry)	Arkansas	
Lock & Dam 7 (Murray)	Arkansas	
Lock & Dam 6 (David D. Terry)	Arkansas	
Lock & Dam 5	Arkansas	
Lock & Dam 4	Arkansas	
Lock & Dam 3	Arkansas	E1 0
Lock & Dam 2	Arkansas	519
Lock & Dam 1	Arkansas	500
Los Esteros	Rio Grande	500
Marion	Arkansas	175
Markham Ferry Dam (Lake Hudson)	Arkansas	
Mansfield Dam (Marshall Ford Dam) Lake Travis	Colorado	
Marshall Ford Dam (Mansfield Dam) Lake Travis	Colorado	
Meredith	Arkansas	
Mountain Park Dam, Tom Steed Reservoir	Red	
Millwood	Red	362
Murray LD 7	Ar kansas	
Navarro Mills	Trinity	414
Newt Graham LD 18	Arkansas	161
Nimrod	Arkansas	273
Norfork	White	26
Norman Dam, Lake Thunderbird	Arkansas	
North Fork	Brazos	461

PROJECT NAME	RIVER BASIN	PAGE NO.
0 C Fisher	Colorado	478
Oologah	Ar kansas	125
Optima	Arkansas	223
Ozark-J T LD 12	Ar kansas	504
Pat Mayse	Red	310
Pensacola Dam, Grand Lake O' the Cherokees	Ar kansas	
Pine Creek	Red	322
Platoro	Rio Grande	·
Proctor	Brazos	443
Pueblo	Ar kansas	
R S Kerr LD 15	Arkansas	251
Sam Rayburn	Neches	380
Sanford Dam, Lake Meredith	Arkansas	
Skiatook	Ar kansas	156
Somerville	Brazos	471
Stillhouse H	Brazos	455
Sumner	Rio Grande	
Table Rock	White	526
Tenkiller Ferry	Arkansas	210
Texoma Lake (Denison Dam)	Red	299
Thunderbird	Arkansas	
Toad Suck Ferry LD 8	Ar kansas	
Tom Steed	Red	
Toronto	Ar kansas	94
Trinidad	Arkansas	55
Twin Buttes	Colorado ~	
Two Rivers	Rio Grande	502
W D Mayo LD 14	Ar kansas	253
Waco	Brazos	438
Waurika	Red	290
Webbers Falls LD 16	Arkansas	208
Whitney	Brazos	432
Wister	Arkansas	255
Wright Patman	Red	368

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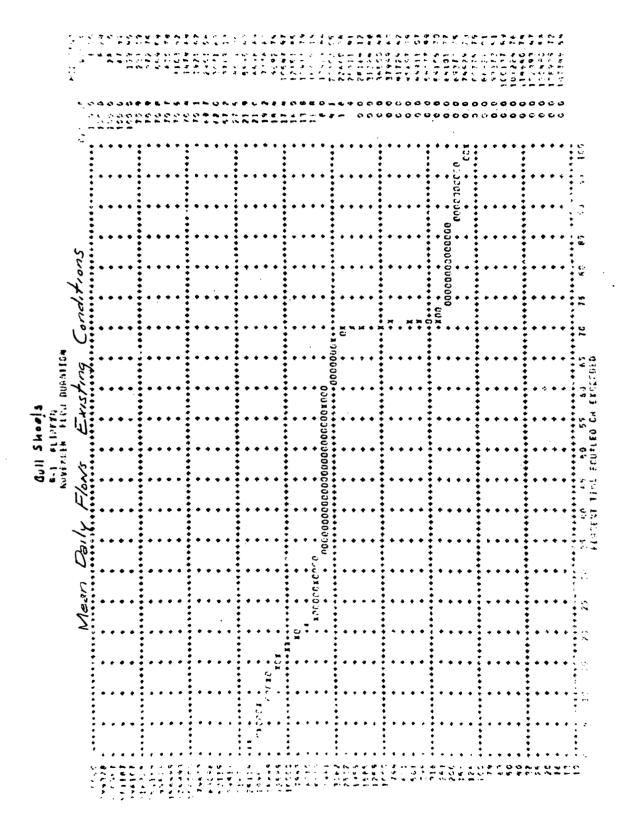


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Fig. 5

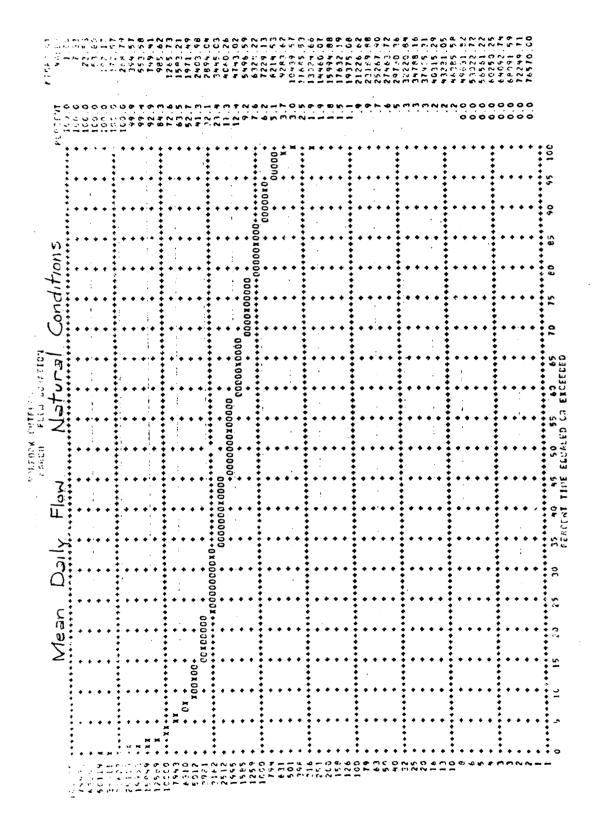


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Fig. 9

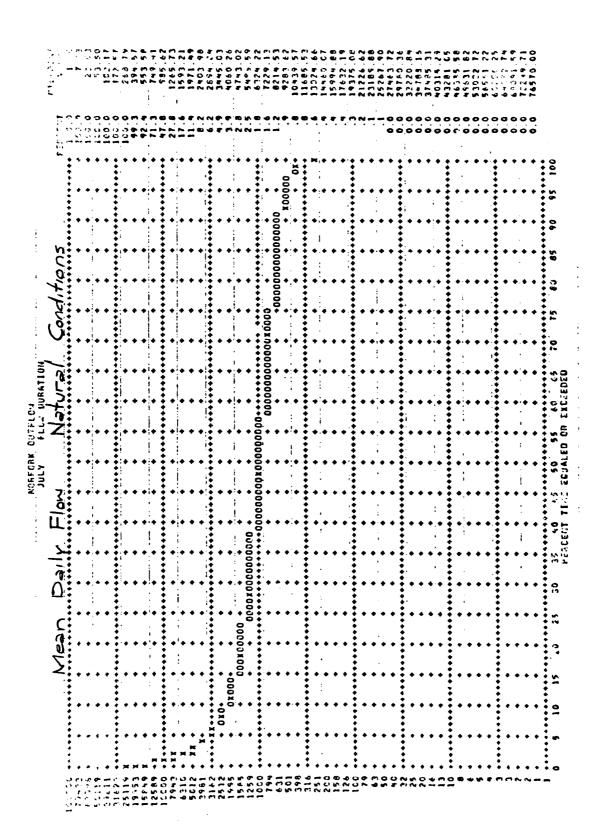


Fig. 10

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Fig. 15

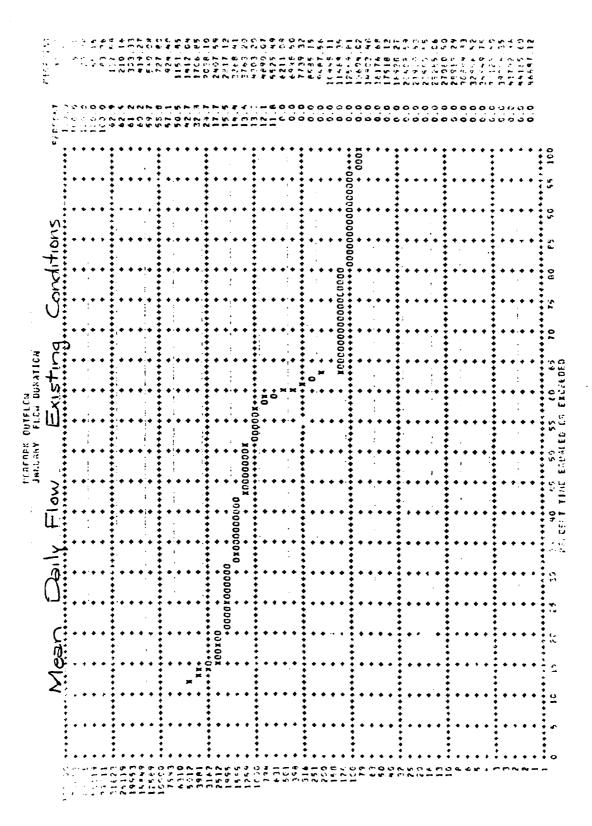


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Fig. 19

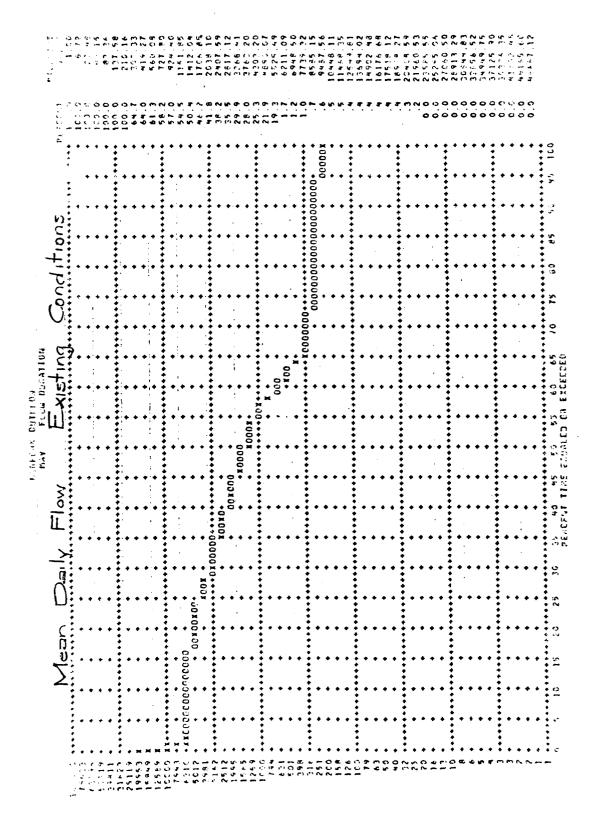


Fig. 20

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Fig. 21

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Fig. ZZ

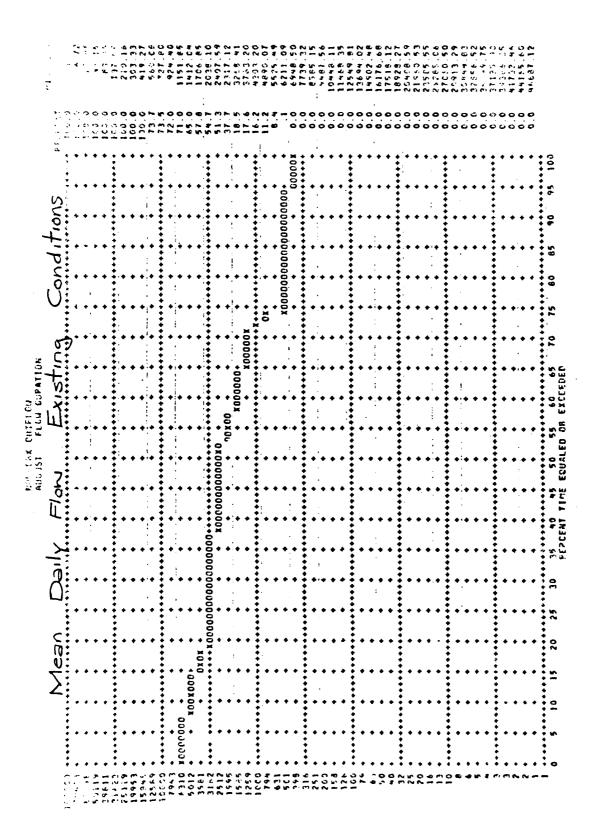


Fig. 23

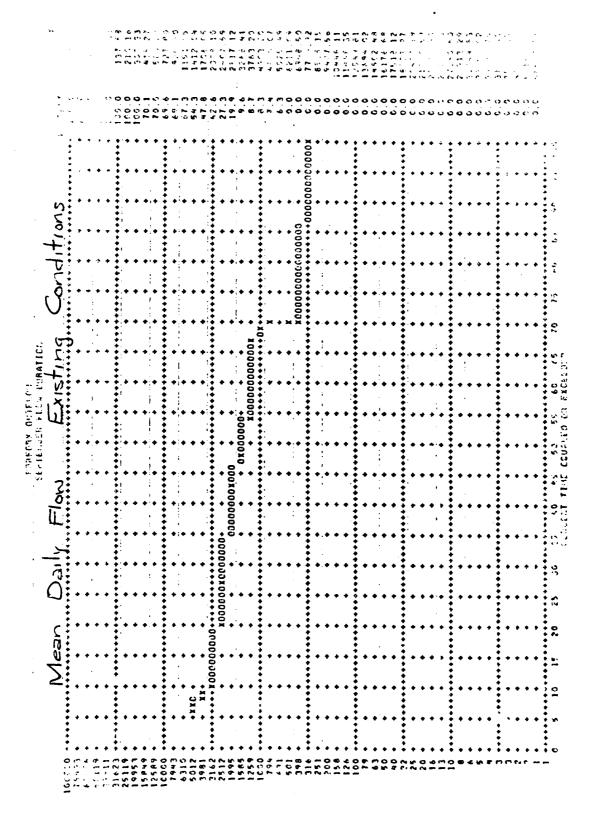


Fig. 24

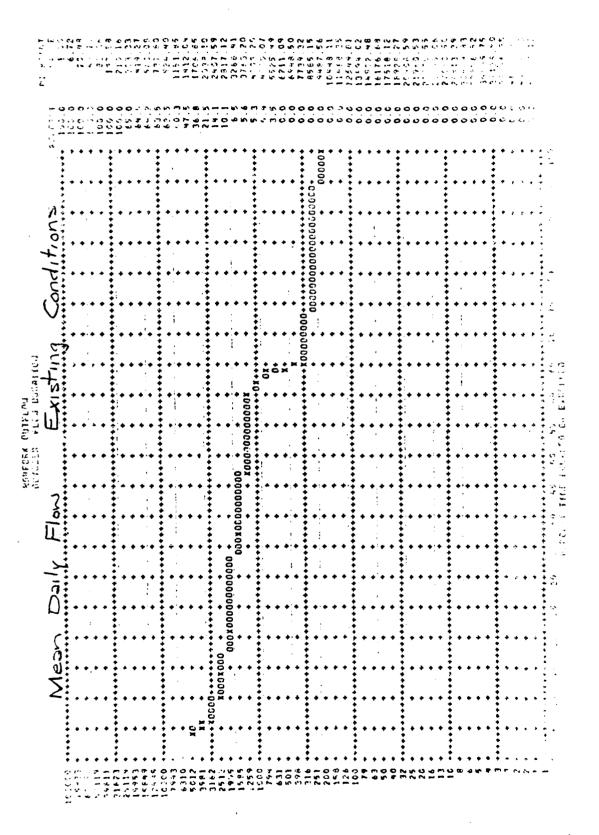


Fig. 25

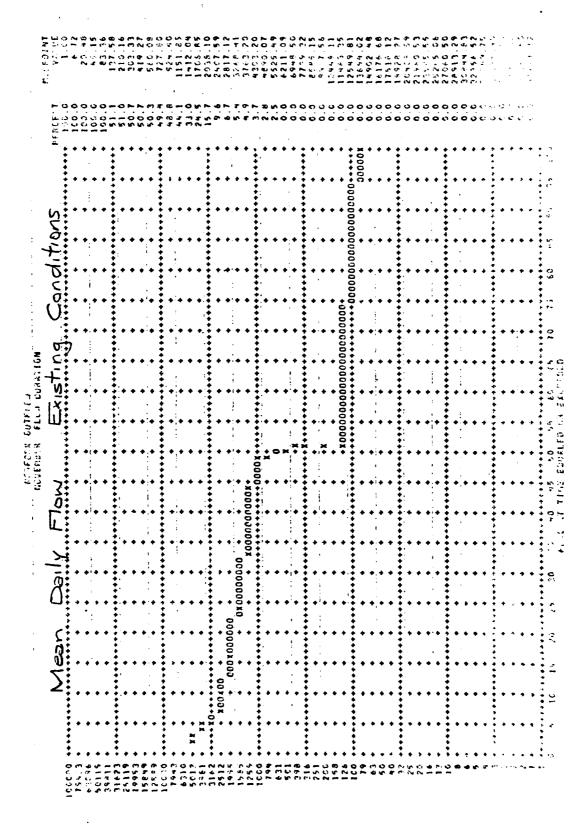


Fig. 26

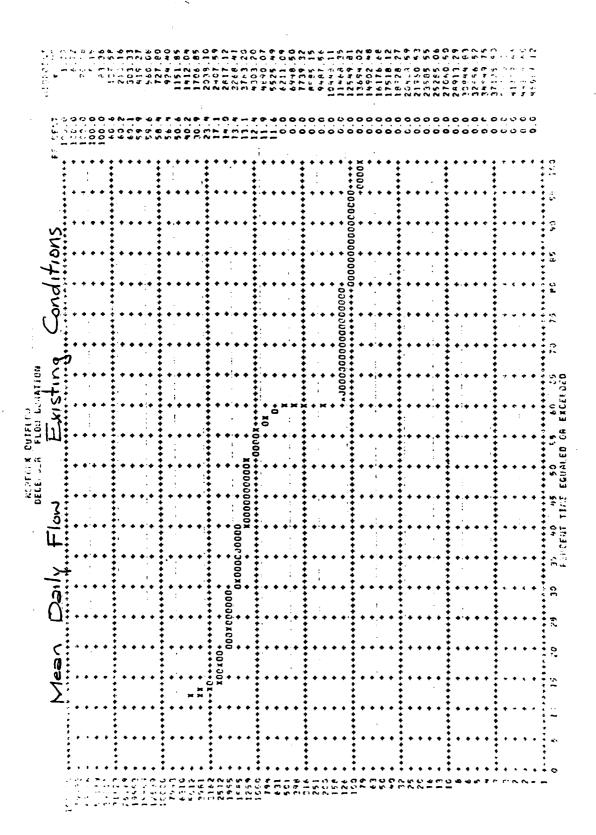


Fig. 27

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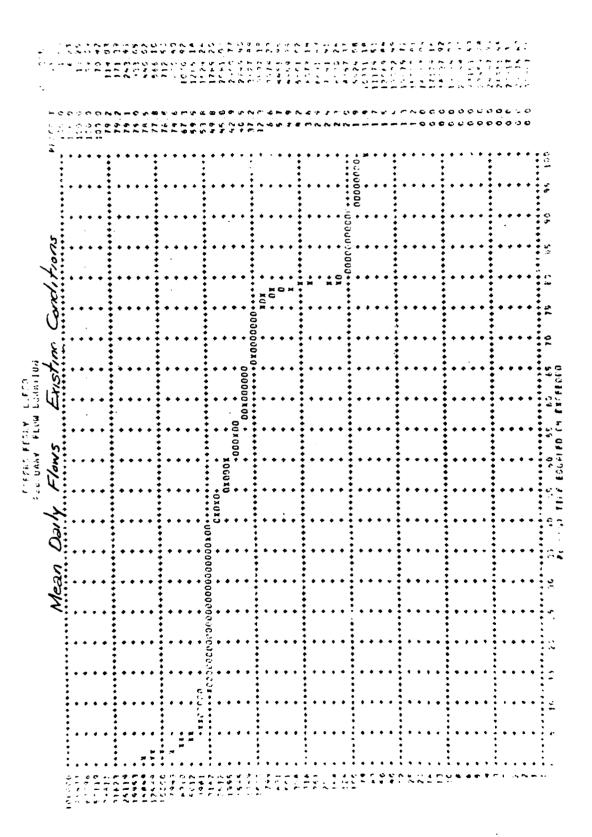


Fig. 5

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Fig. 8

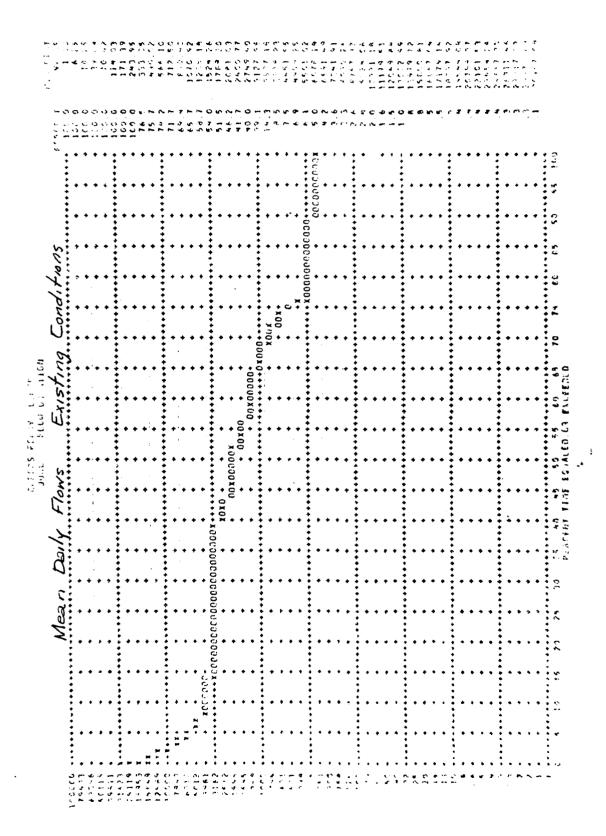


Fig. 9

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Fig. 19

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Fig. 20

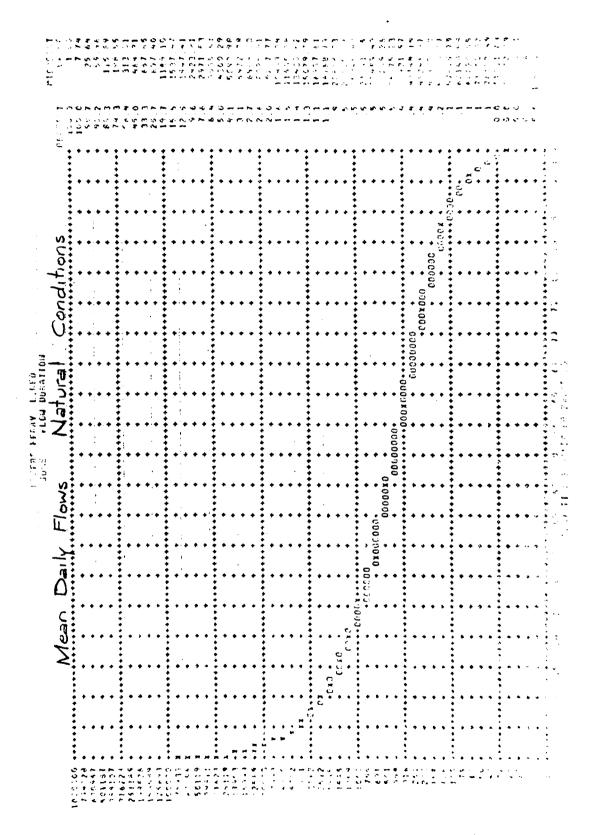


Fig. 21

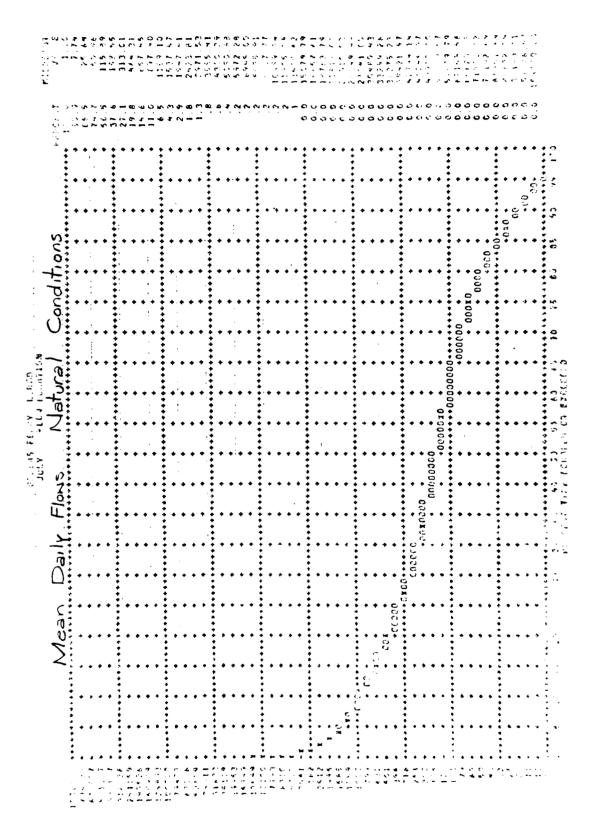


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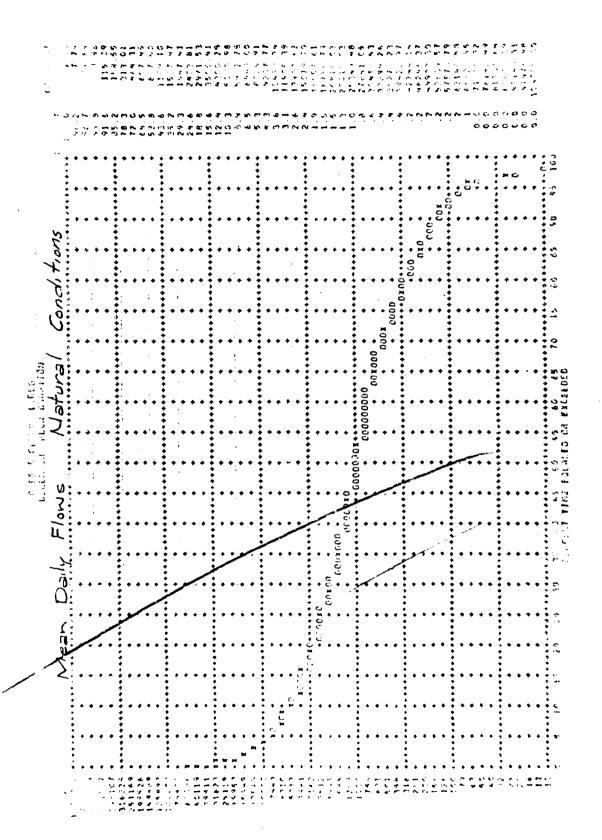
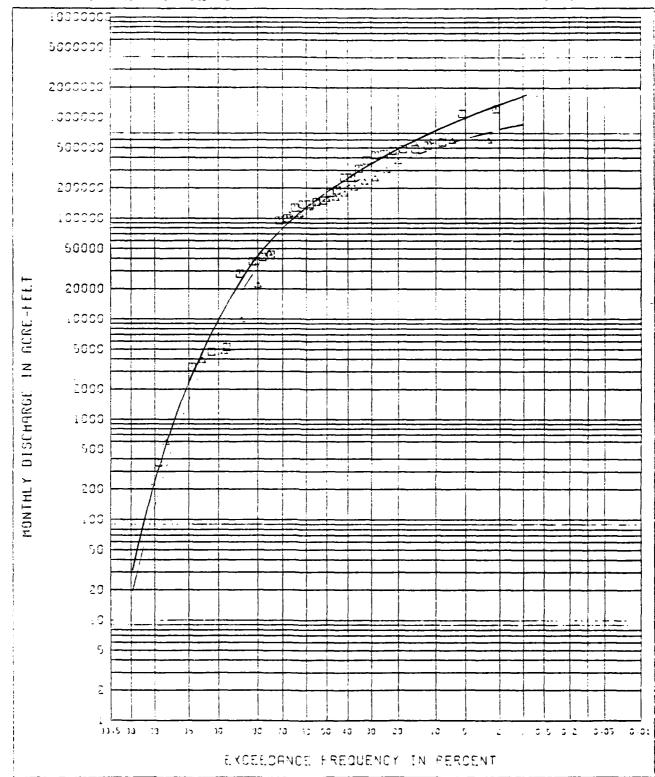


Fig. 27



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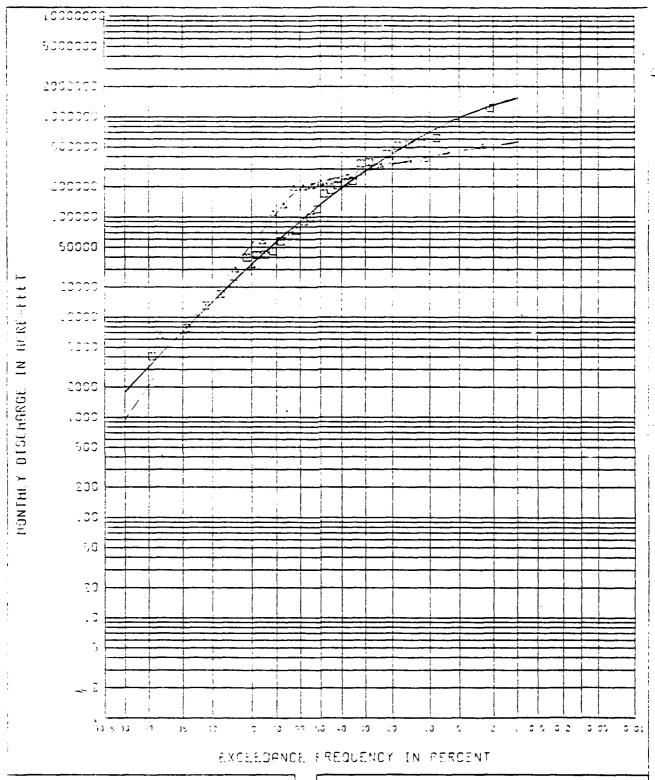
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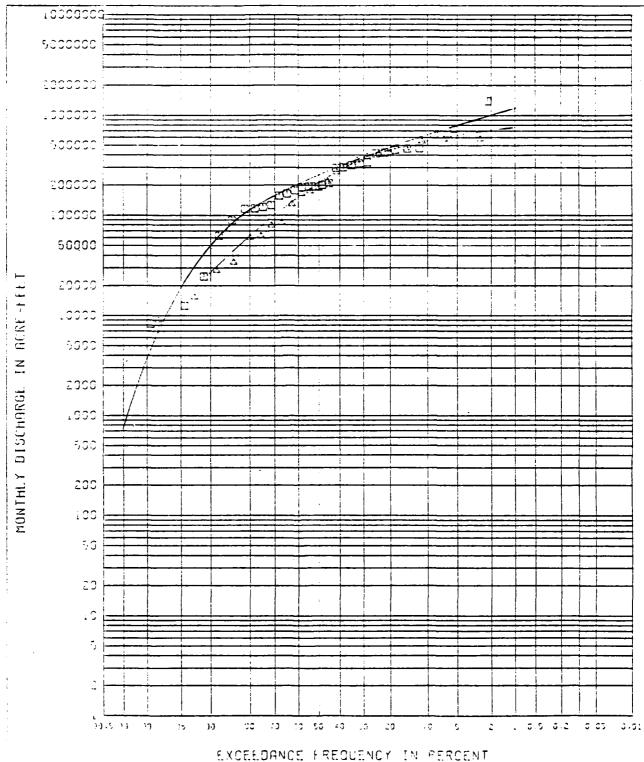
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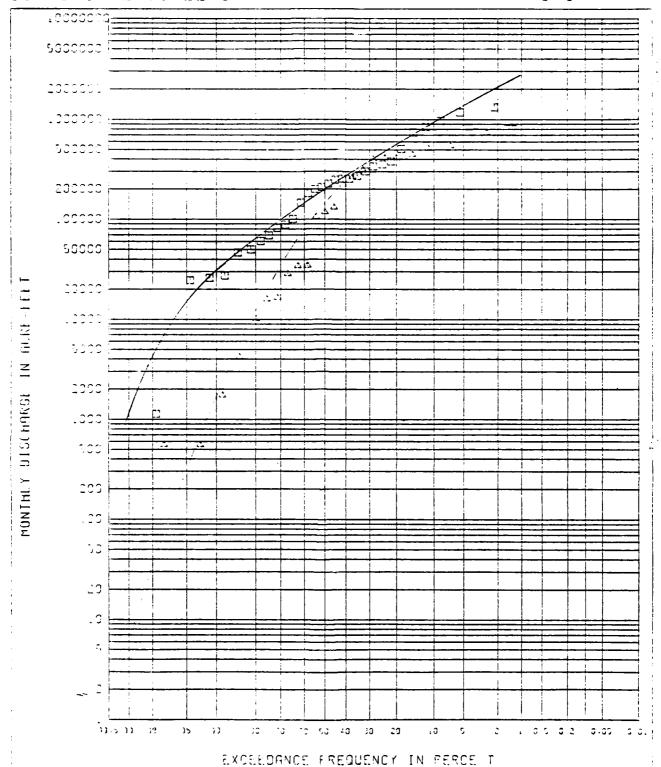
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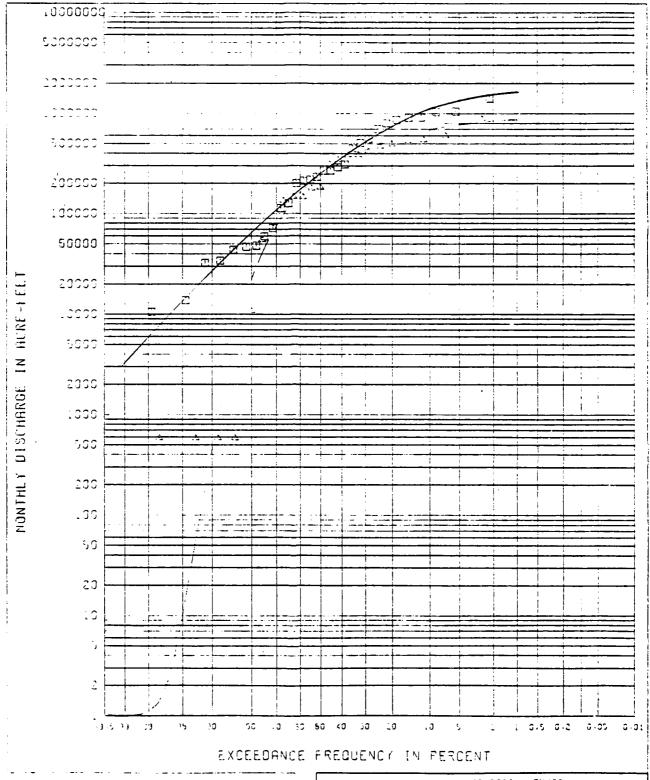
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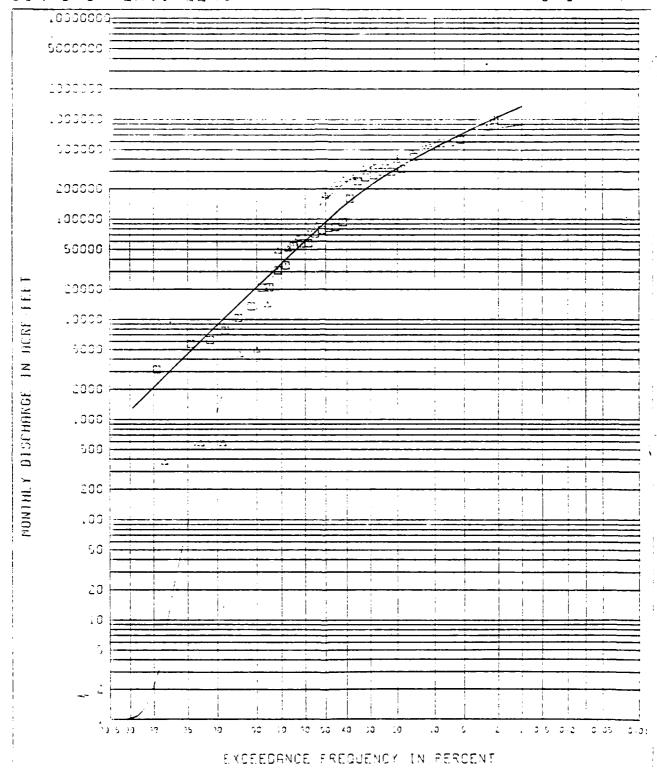
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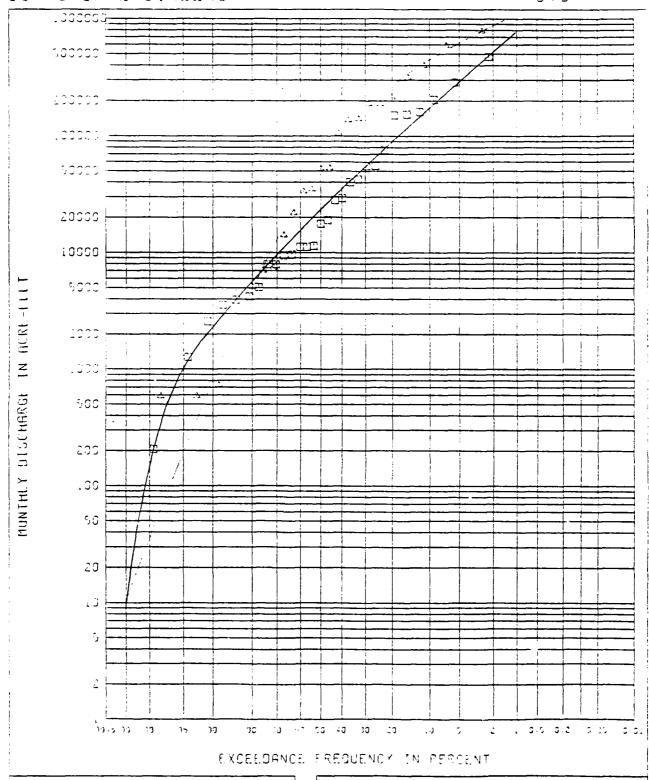
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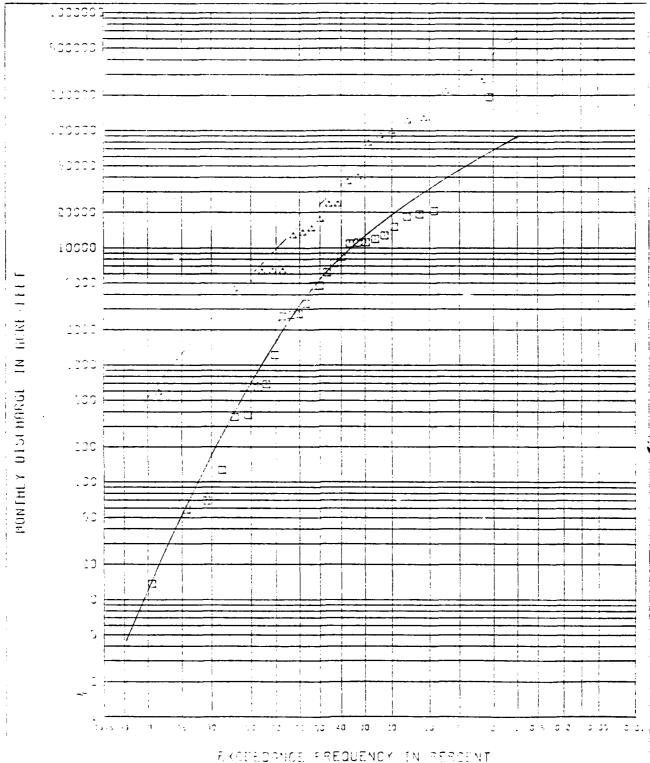
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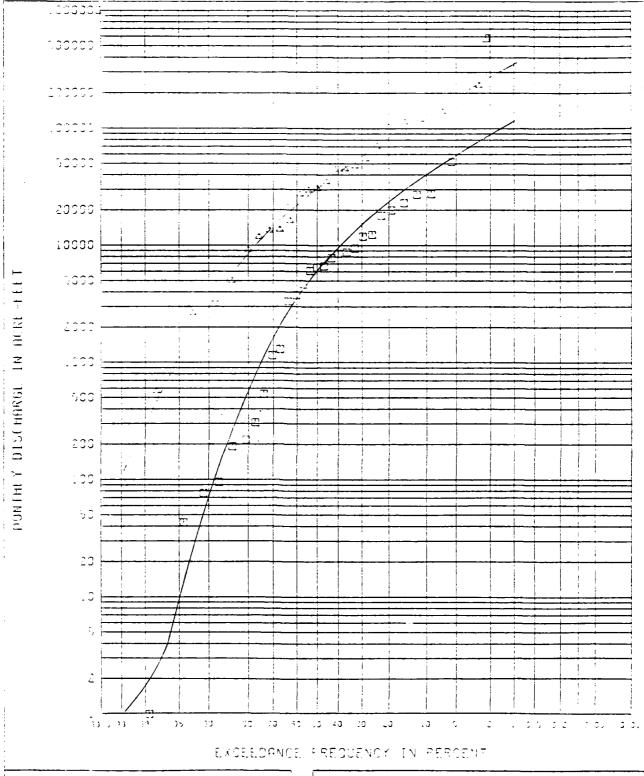
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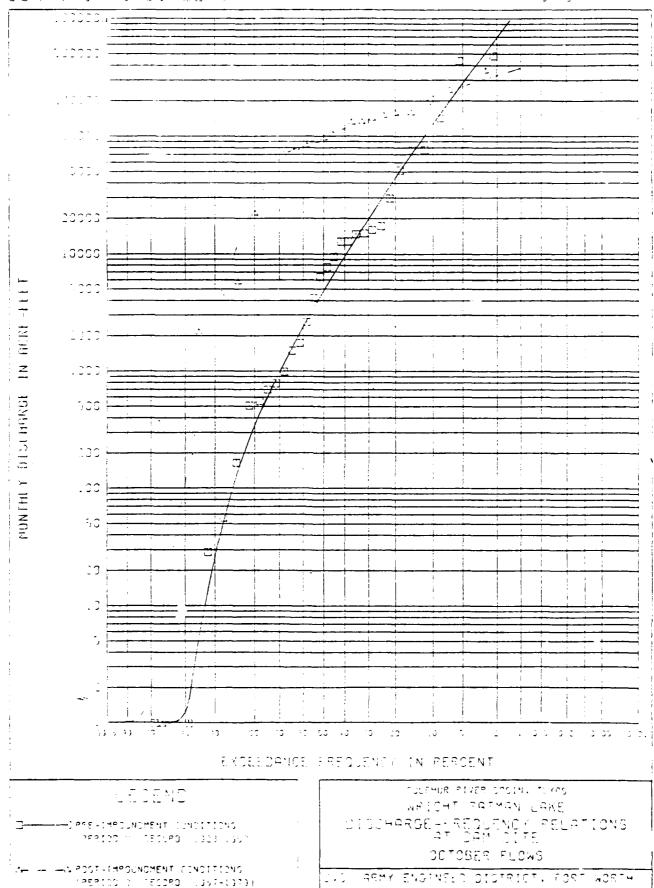
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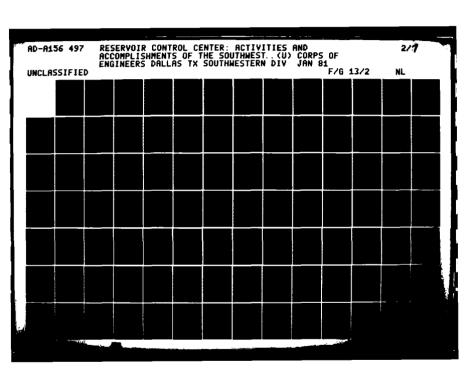
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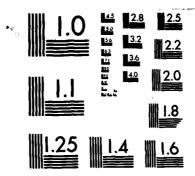
PLATE 9



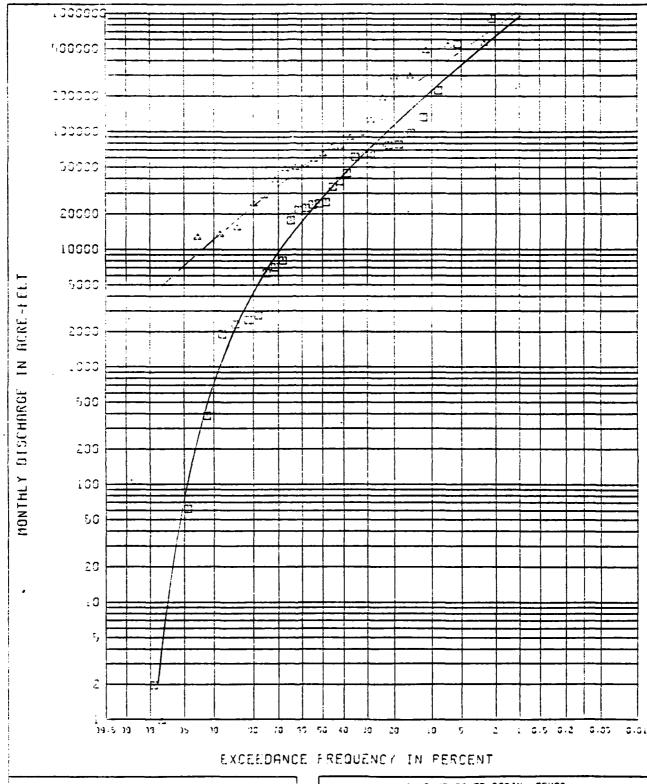
TO ACCOMPANY INCEPEAM FLOW PROSECTION AND NEEDS. EVALUATION REPORT OF DECEMBER 1990

PLATE 10





MICROCOPY RESOLUTION TEST CHART
NATIONAL BUREAU OF STANDARDS-1963-A



· LEGEND

(135) PPE-IMPOUNDMENT CONDITIONS (PERIOD OF RECORD (1323-135))

- - APOST-IMPOUNDMENT CONDITIONS
(PERIOD OF RESOND 1957-1973)

COLPHUR RIVER SASIN. TEXAS

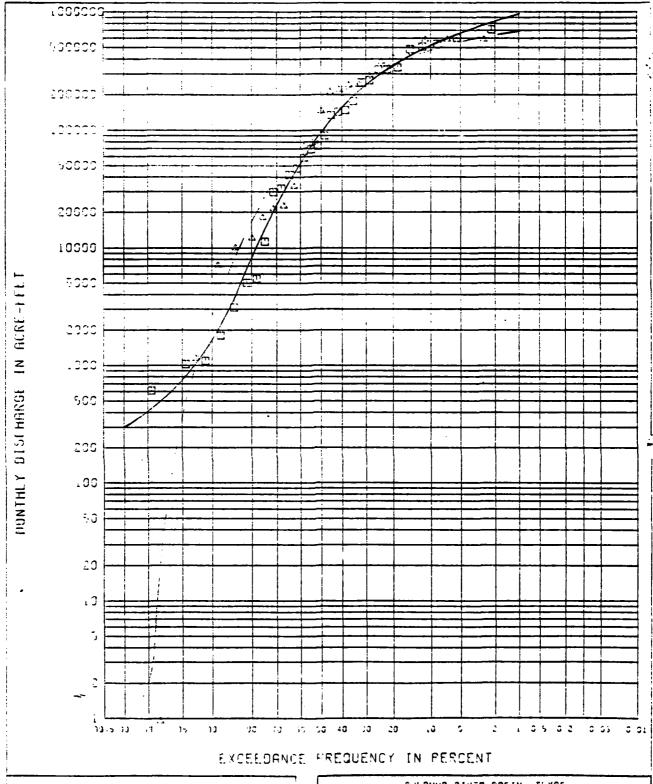
WRIGHT PATMAN LAKE

DISCHARGE-FREQUENCY RELATIONS

AT DAM SITE

NOVEMBER FLOWS

U.S. ARMY ENGINEER DISTRICT. FORT WORTH TO RECEMPANY INSTREAM FLOW PROBLEMS AND NEEDS EVALUATION REPORT OF DECEMBER 1380 PLATE 11



LECEND

Descriptions (Sented of RECORD (1923-1953))

A - - A POST-IMPOUNDMENT CONDITIONS (PERIOD OF RECORD (1957-1979) CULPHUR RIVER STOTM. TEXAS

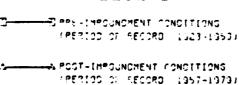
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DISCHARGE-PREQUENCY RELATIONS

AT DAM SITE

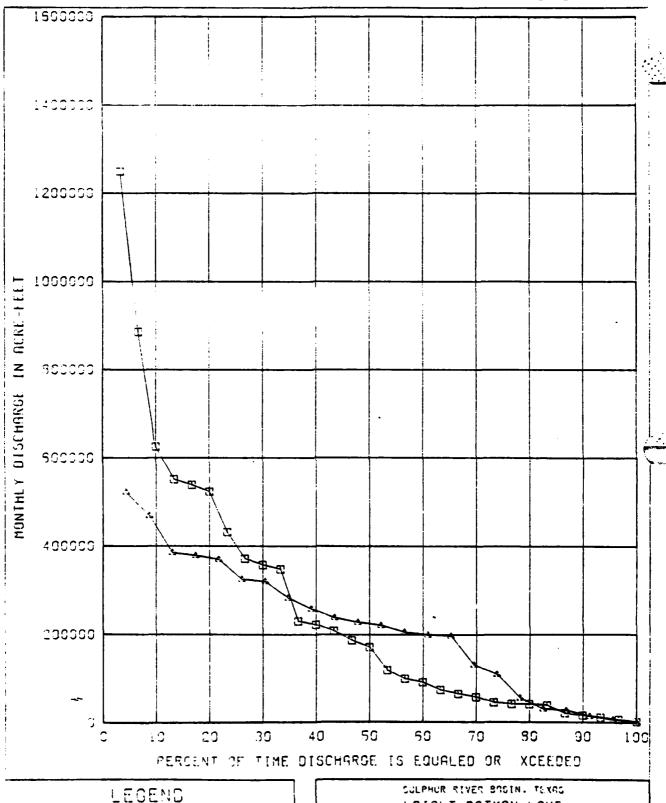
DECEMBER FLOWS

U.S APMY ENGINEER DISTRICT. FORT WORTH TO ACCOMPANY INSTREAM FLOW PROBLEMS AND NEEDS EVALUATION REPORT OF DECEMBER 1000 PLATE 12



FLOW DURATION CURVES AT DAM LITE JANUARY FLOWS

U.S. ARMY ENGINEER DISTRICT. FORT WORTH TO ASSOCIATELY INSTREAM FLOW PROBLEMS AND NEEDS EVALUATION REPORT OF DECEMBER 1390 FLATE 15

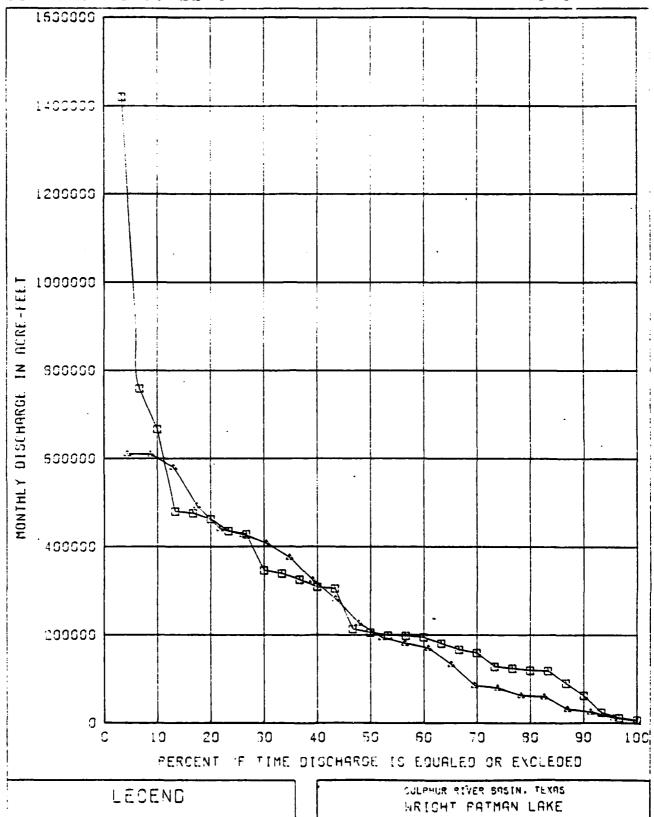


EDITERIMPOUNDMENT CONDITIONS PERIOD OF SECORD (1923-1969)

A FOOT-IMPOUNDMENT CONDITIONS PERIOD OF RECORD .357-197 / SULPHUR RIVER BRSIN. TEXAS WRICHT PATMAN LAKE

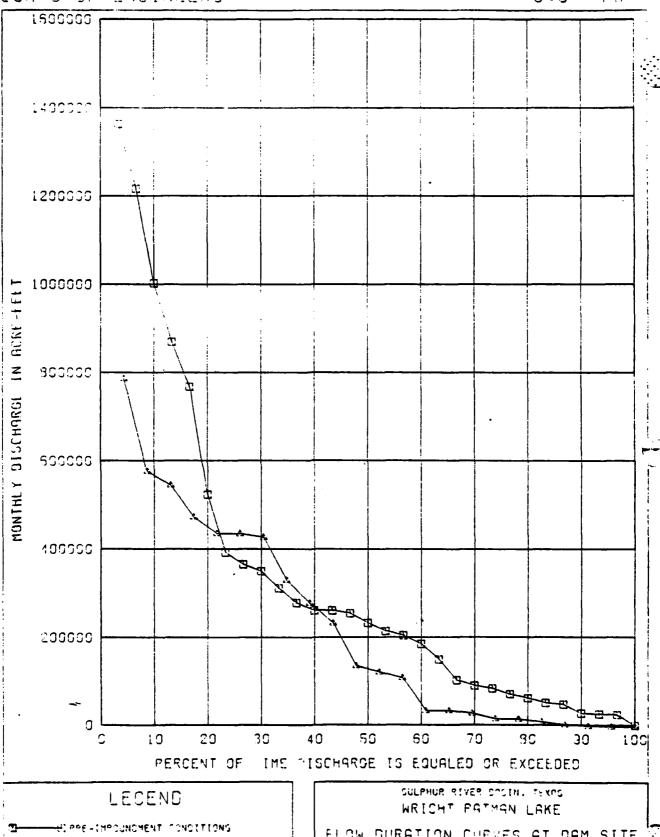
FLOW DURATION CURVES AT DAM SITE ! FEBRUARY FLOWS

ARMY ENGINEER DISTRICT. FORT WORTH TO ASCOMPANY INSTREAM FLOW PROBLEMS AND NEEDS EVALUATION REPORT OF DECEMBER 1990 PLATE 14



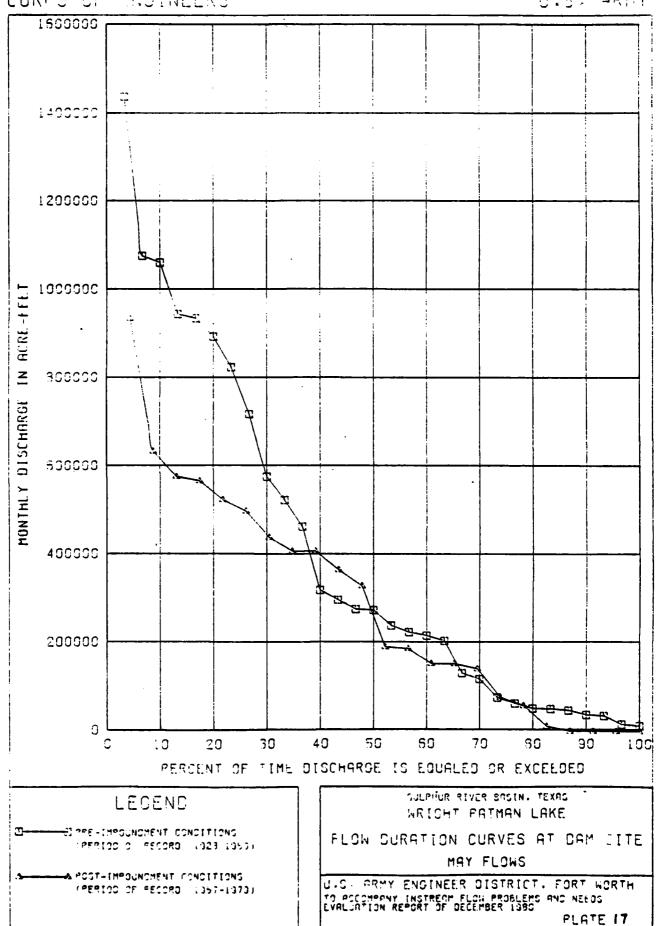
FLOW DURATION CURVES AT DAM TITE
MARCH FLOWS

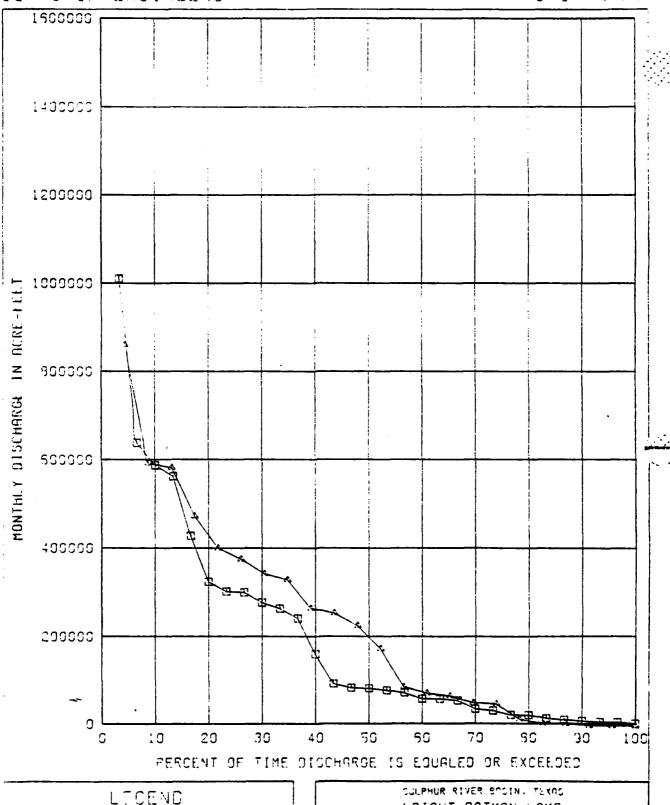
U.S. ARMY ENGINEER DISTRICT. FORT WORTH TO ASCOMPANY INSTREAM FLOW PROBLEMS AND NEEDS EVALUATION REPORT OF DECEMBER 1990 PLATE 15



1 1500RD (023-1050) BPOST-IMPOUNDMENT SONDITIONS (PERIOD OF SECORD (1957-1979) FLOW DURATION CURVES AT DAM SITE; APRIL FLOWS

U.S. GRMY ENGINEER DISTRICT. FORT WORTH PLATE 16



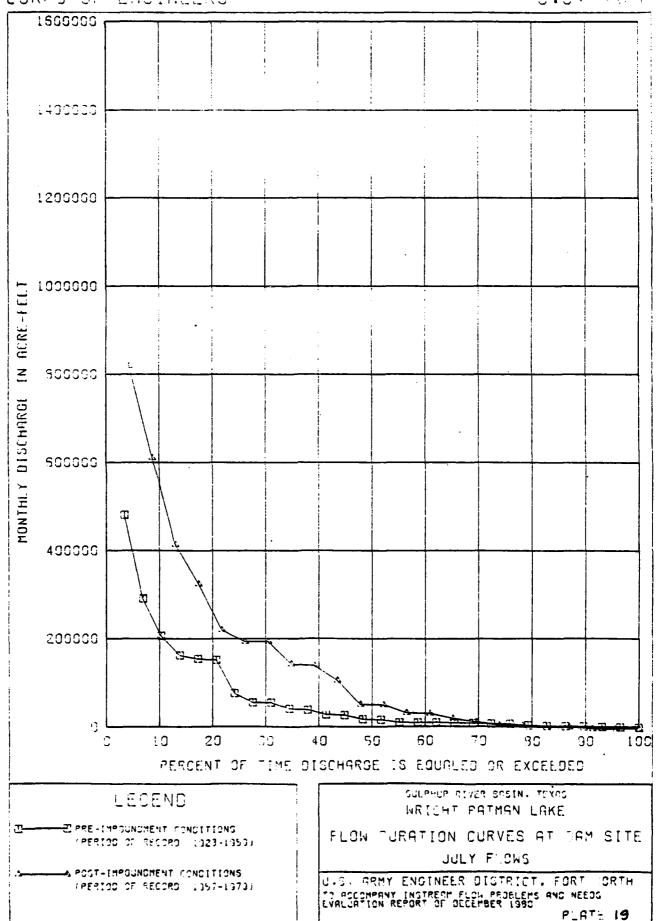


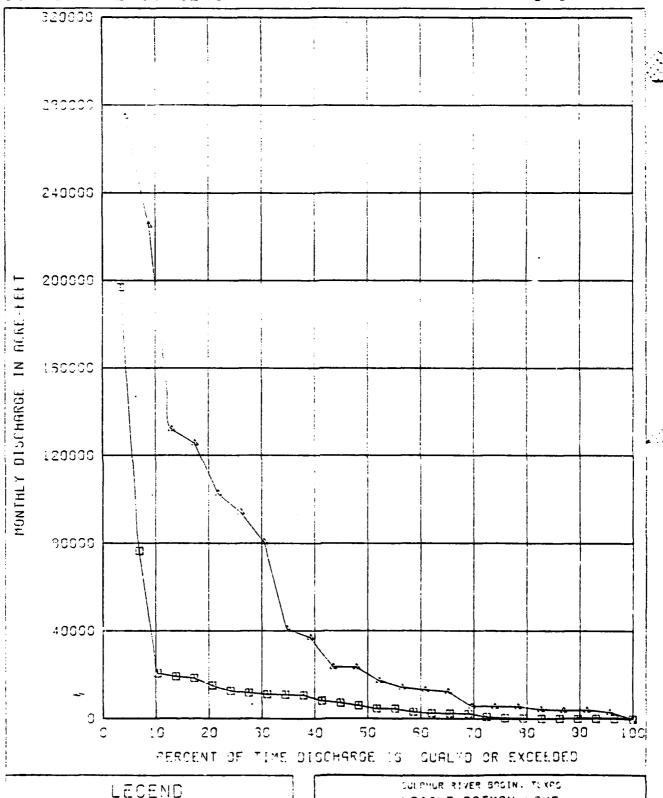
-EI PRE-IMPOUNDMENT CONDITIONS (PERIOD D) (SECORD 1323-1950) N POST-IMPOUNCHENT CONDITIONS (PERIOT OF RECORD 1057-1070) WRICHT PATMEN LAKE

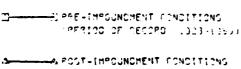
FLOW DURATION CURVES AT DAM SITE

JUNE FLOWS

GRMY ENGINEER DISTRICT, FORT WORTH PLATE 18





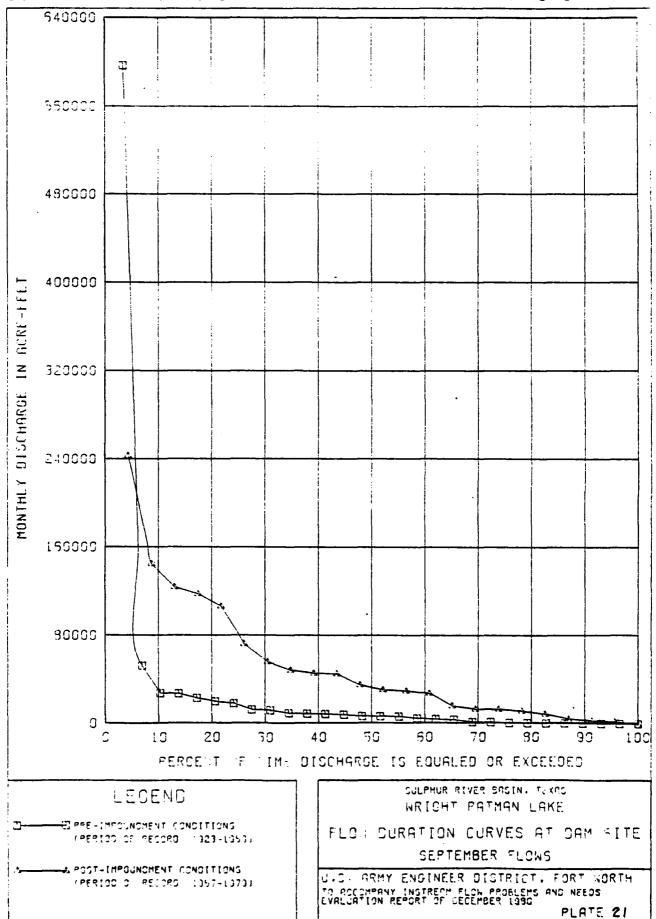


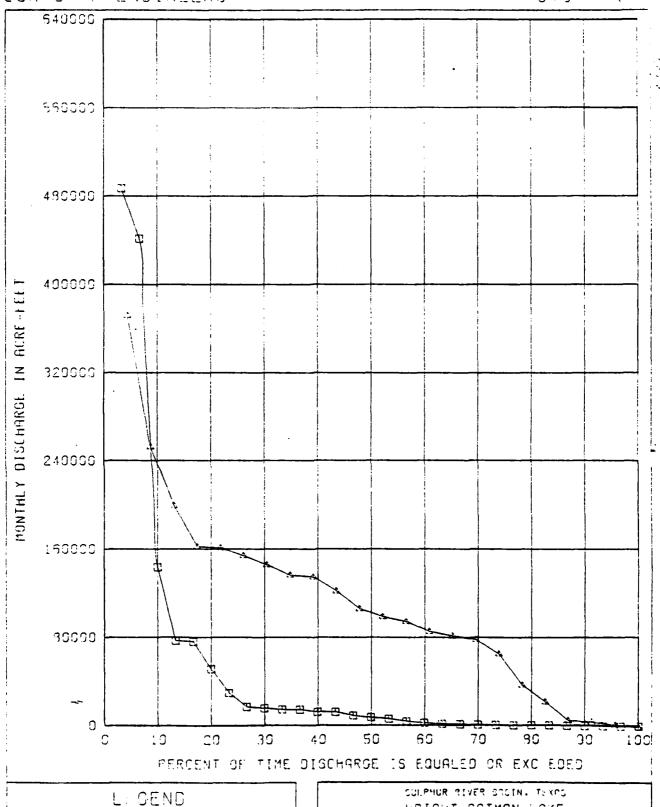
PERIOD OF RECORD 1.357-1373)

SULPHUR RIVER BOSIN. TEXPS WRIGHT PRIMAN LAKE

FLOW OURATION CURVES AT DAM LITE AUGUST FLOWS

ARMY ENGINEER DISTRICT. FOR' ORTH TO CSCOMPRNY INSTREAM FLOW PROBLEMS AND NEEDS EVALUATION REPORT OF DECEMBER 1000 PLATE 20





EIPRE -IMPOUNDMENT (CONDITIONS OF RECORD 1023-19533

POST-IMPOUNDMENT CONDITIONS (PERIOD OF RECORD

WRIGHT PATMAN LAKE

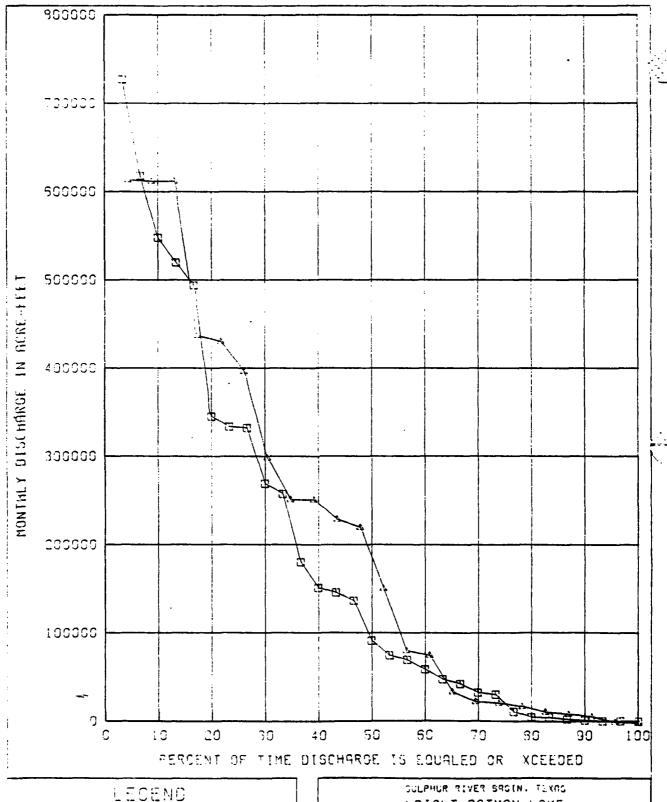
ON DURATION CURVES AT PAM SIT CCTOBER FLOWS

GRMY ENGINEER DISTRICT, FORT WORTH TO ASCOMPANY INSTREAM FOR PRISEMS AND NEEDS PLATE 22

TO COCCUPANY INSTREME FLOW PROBLEMS AND NEEDS EVALUATION REPORT OF DECEMBER 1990

PLATE 23

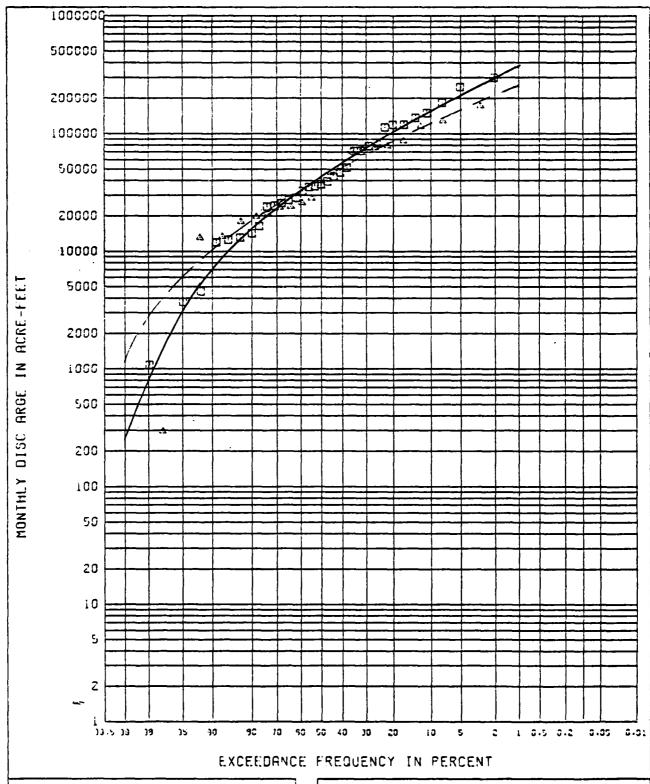
(PERIOD OF MECORD .. 357-1973)



ELPRE-IMPOUNDMENT CONDITIONS 01 FECORO 1323-1350) POST-IMPOUNDMENT CONDITIONS PERTOD OF SECORD 1357-1373) WRICHT PATMAN LAKE

FLOW DURATION CURVES AT DAM ITE DECEMBER FLOWS

ARMY ENGINEER DISTRICT. FORT WORTH TO ACCOMPANY INSTREAM FLOW PROBLEMS AND NEEDS EVALUATION REPORT OF DECEMBER 1995 PLATE 24 · ...



LEGEND

PRE-IMPOUNDMENT CONDITIONS

(PERIOD OF RECORD 1924-1957)

- - POST-IMPOUNDMENT CONCITIONS (PERI C OF RECORD 1959-1979)

** ** **

CYPRESS (REEK BASIN, TEXAS

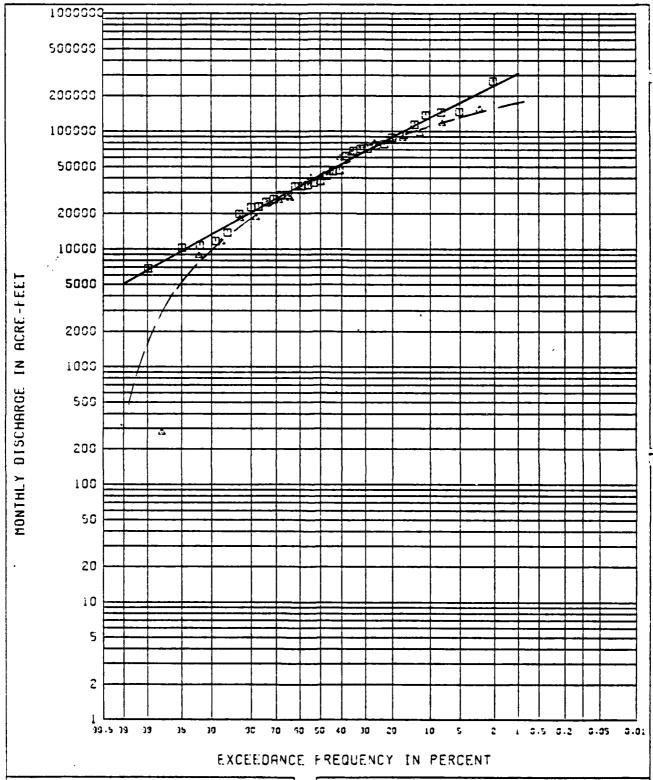
LAKE OF THE PINES

DISCHARGE-FREQUENCY RELATIONS

AT DAM SITE

JANUARY FLOWS

U.S. ARMY ENGINEER DISTRICT. FORT WORTH
TO ACCOMPANY INSTREAM FLOW PROBLEMS AND NEEDS
EVALUATION REPORT OF DECEMBER 1990
PLATE 1



B-----EPRE-IMPOUNDMENT CONDITIONS
(PERIOD OF RECORD 1924-1957)

- - - POST-IMPOUNDMENT CONDITIONS
(PERIOD OF RECORD (1959-1979)

CYPRESS (REEK BOSIN, TEXAS

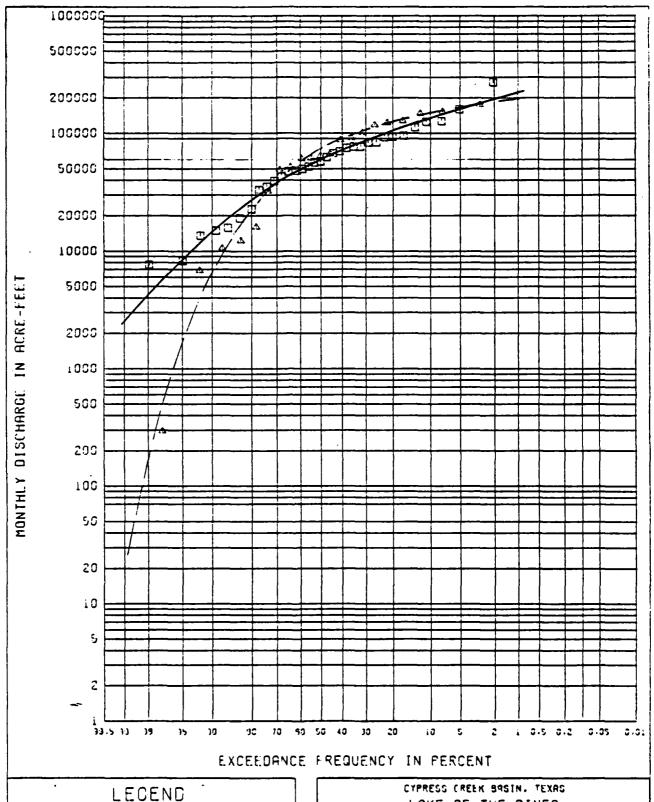
LAKE OF THE PINES

DISCHARGE-FREQUENCY RELATIONS

AT DAM SITE

FEBRUARY FLOWS

U.S. ARMY ENGINEER DISTRICT. FORT WORTH
TO ACCOMPANY INSTREMM FLOW PROBLEMS AND NEEDS
EVALUATION REPORT OF DECEMBER 1990
PLATE 2

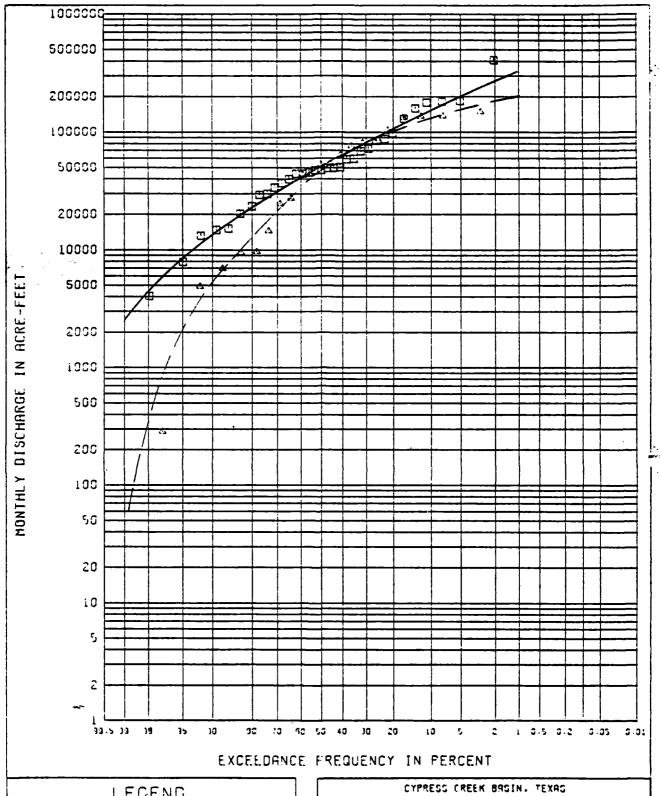


包 PRE-IMPOUNDMENT CONDITIONS (PERIOD OF SECORD 1924-1957)

& POST-IMPOUNDMENT CONDITIONS (PERIOD OF RECORD (1959-1979)

LAKE OF THE PINES DISCHARGE-FREQUENCY RELATIONS AT DAM SITE MARCH FLOWS

U.S. ARMY ENGINEER DISTRICT. FORT WORTH TO ACCOMPANY INSTREAM FLOW PROBLEMS AND NEEDS EVALUATION REPORT OF DECEMBER 1986 PLATE S



E PRE-IMPOUNCHENT CONCITT NO (PERIOD OF RECORD | 1924-1957)

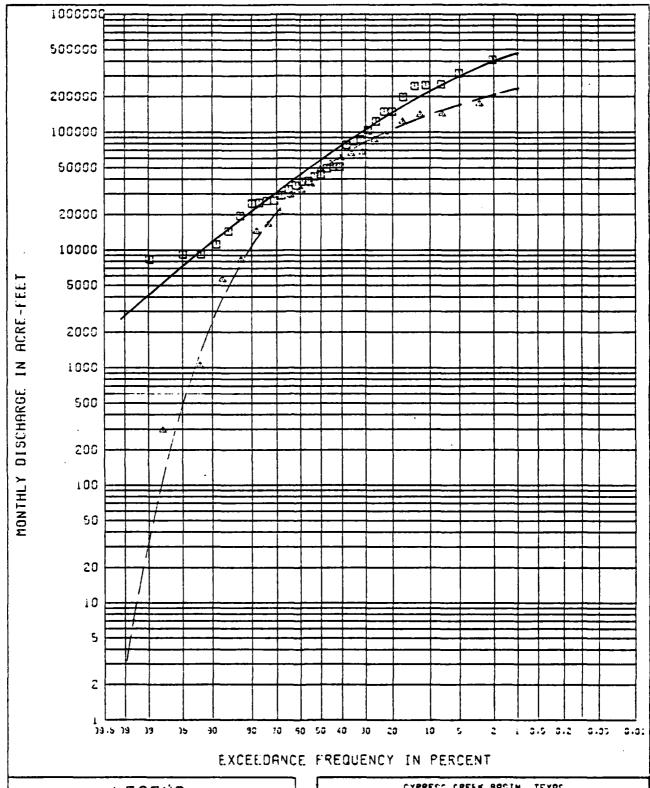
& POST-IMPOUNDMENT CONDITIONS (PERIOD OF RECORD 1951-1979)

LAKE OF THE PINES DISCHARGE-FREQUENC RELATIONS AT DAM SITE APRIL FLOWS

U.S. ARMY ENGINEER DISTRICT. FORT WORTH TO ASCOMPANY INSTREAM FLOW PROBLEMS AND NEEDS EVALUATION REPORT OF DECEMBER 1980 PLATE 4

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LEGEND

PRE-IMPOUNDMENT CONDITIONS
(PERIOD OF RECORD 1924-1957)

 CYPRESS CREEK BASIN. TEXAS

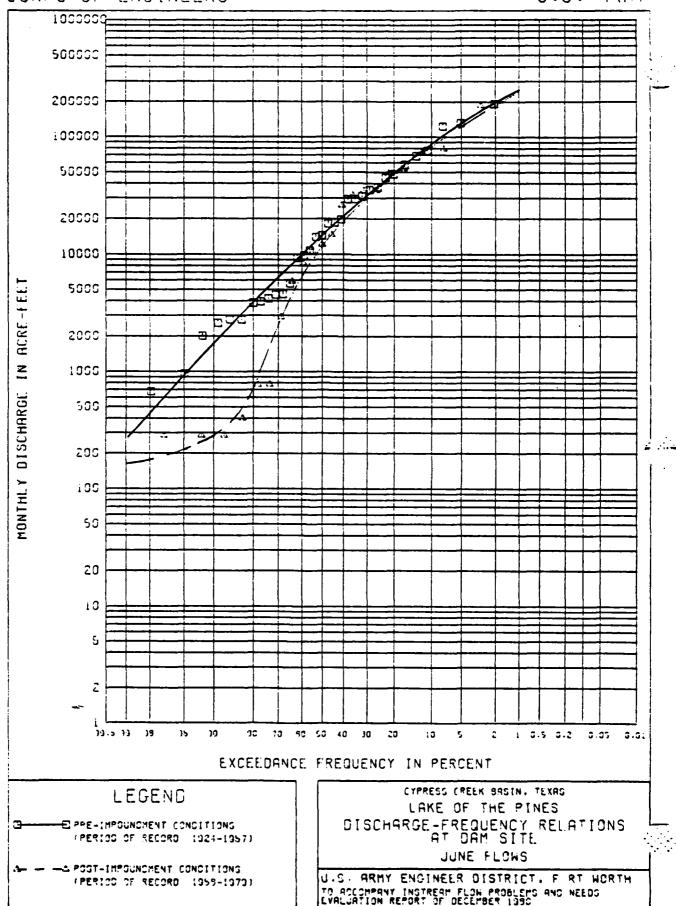
LAKE OF THE PINES

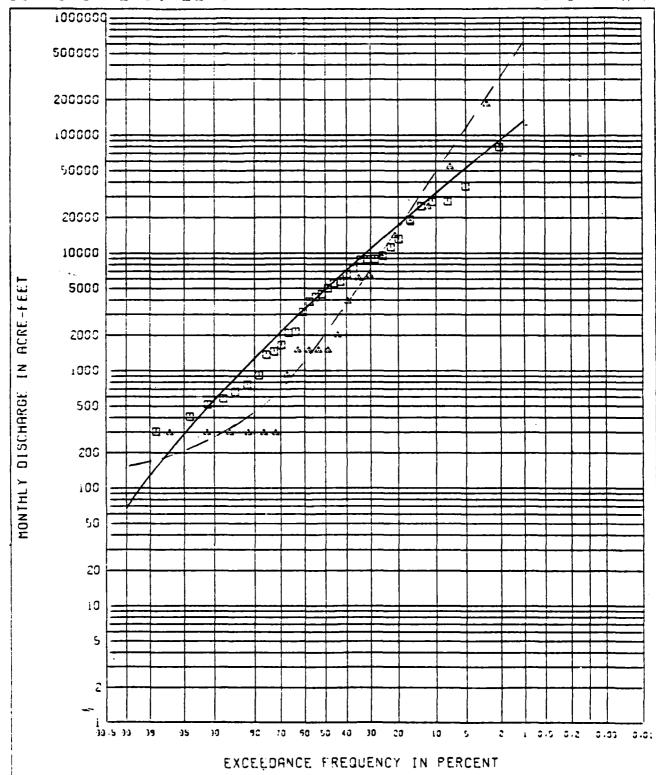
DISCHARGE-FREQUENCY RELATIONS
AT DAM SITE

MAY FLOWS

U.S. ARMY ENGINEER DISTRICT. FORT HORTH TO ACCOMPANY INSTREAM FLOW PROBLEMS AND NEEDS EVALUATION REPORT OF DECEMBER 1995 PLATE 5

PLATE 6





PRE-IMPOUNDMENT CONDITIONS
(PERIOD OF RECORD 1921-1957)

→ → POST-IMPOUNCHENT CONCITIONS (PERIOD 0 RE ORD 1959-1970) CYPRESS CREEK ERSIN, TEXAS

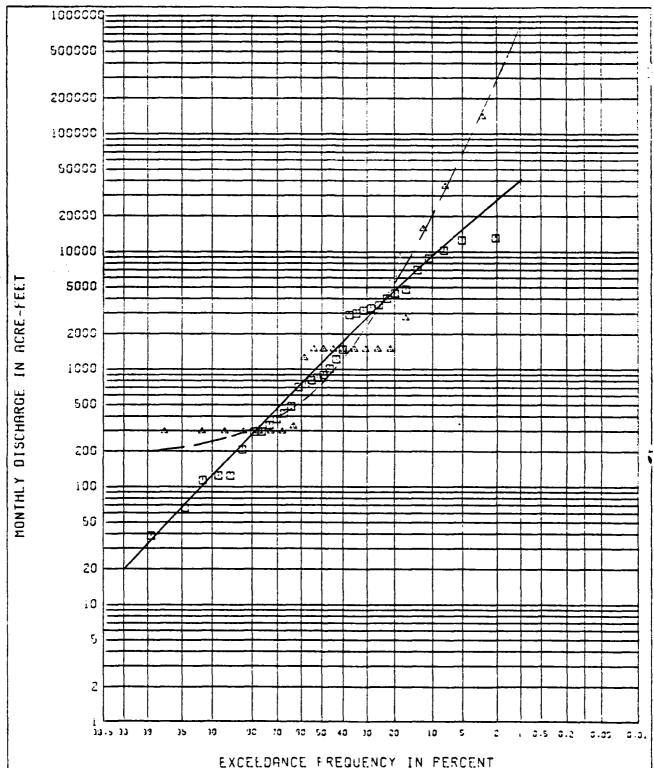
LAKE OF THE PINES

DISCHARGE-FREQUENCY RELATIONS

AT DAM SITE

JULY FLOWS

U.S. ARMY ENGINEER DISTRICT. FORT WORTH
TO ACCOMPANY INSTREAM FLOW PROBLEMS AND WELDS
EVALUATION REPORT OF DESCRIBER 1990
PLATE 7



PRE-IMPOUNDMENT CONDITIONS
(PERIOD OF RECORD 1924-1957)

- - A POST-IMPOUNDMENT CONDITIONS
(PERIOD O RECORD (955-1979)

CYPRESS CREEK STSIN. TEXAS

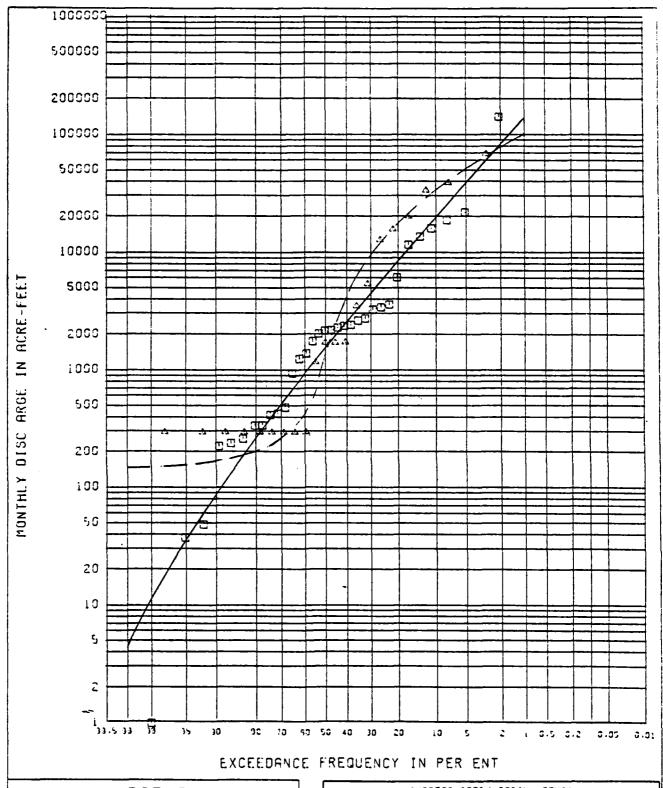
LAKE OF THE PINES

DISCHARGE-FREQUENCY RELATIONS

AT DAM SITE

AUGUST FLOWS

U.S. ARMY ENGINEER DISTRICT. F RT WORTH TO ACCOMPANY INSTREAM FLOW PROBLEMS AND NEEDS EVALUATION REPORT OF DECEMBER 1990

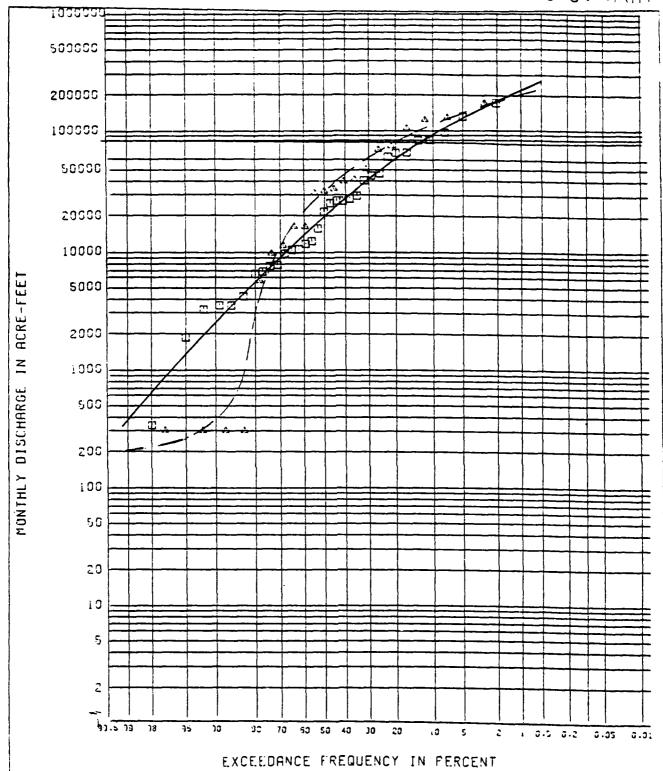


O PRE-IMPOUNDMENT CONDITIONS
(PRIOD OF RECORD 1924-1957)

- - A POST-IMPOUNDMENT CONDITIONS (PERIOD OF RECORD 1959-1979)

CYPRESS CREEK BASIN. TEXAS
LAKE OF THE PINES
DISCHARGE-FREQUENC / RELATIONS
AT DAM SITE
OCTOBER FLOWS

U.S. ARMY ENGINEER DISTRICT. FORT WORTH
TO ACCOMPANY INSTREAM FLOW PROBLEMS AND NEEDS
EVALUATION REPORT OF DECEMBER 1980
PLATE: 10



PPE-IMPOUNDMENT CONDITIONS
(PERIOD OF SECOND 1924-1987)

- -- POST-IMPOUNDMENT CONDITIONS (PERIOD OF RECORD 1958-1973)

CYPRESS CREEK BRSIN. TEXAS

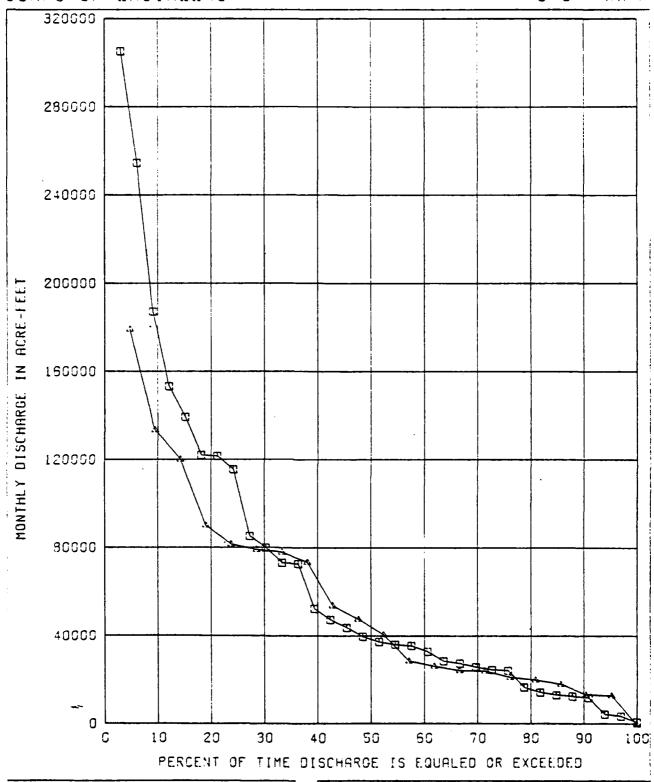
LAKE OF THE PINES

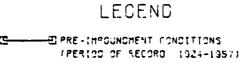
DISCHARGE-FREQUENCY RELATIONS

AT DAM SITE

DECEMBER FLOWS

U.S. ARMY ENGINEER DISTRICT. FORT WORTH
TO ASCOMPANY INSTREMM FLOW PROBLEMS AND NEEDS
EVALUATION REPORT OF DESEMBER 1990
PLATE 12



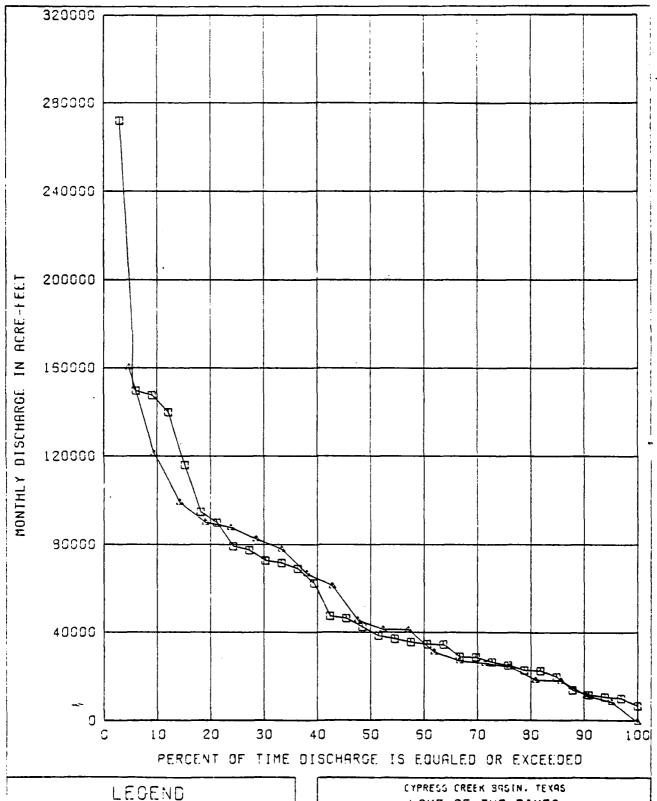


POST-IMPOUNDMENT CONDITIONS (PERIOD OF RECORD 1959-1979)

CYPRESS CREEK BASIN, TEXAS LAKE OF THE PINES

FLOW DURATION CURVES AT DAM SITE JANUARY FLOWS

U.S. ARMY ENGINEER DISTRICT. FORT WORTH
TO ACCOMPANY INSTREAM FLOW PROBLEMS AND WEEDS
EVALUATION REPORT OF DESCRIBER 1390
PLATE 13

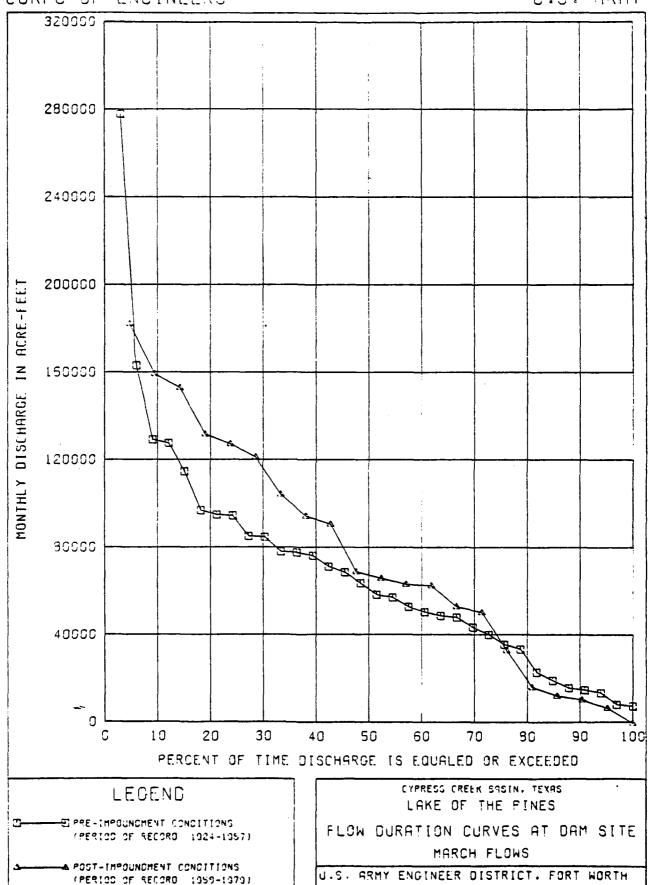


E PRE-IMPOUNDMENT CONDITIONS (PERIOD OF RECORD 1024-1057)

A POST-IMPOUNDMENT CONCITIONS (PERIOD OF RECORD 1059-1070) LAKE OF THE PINES

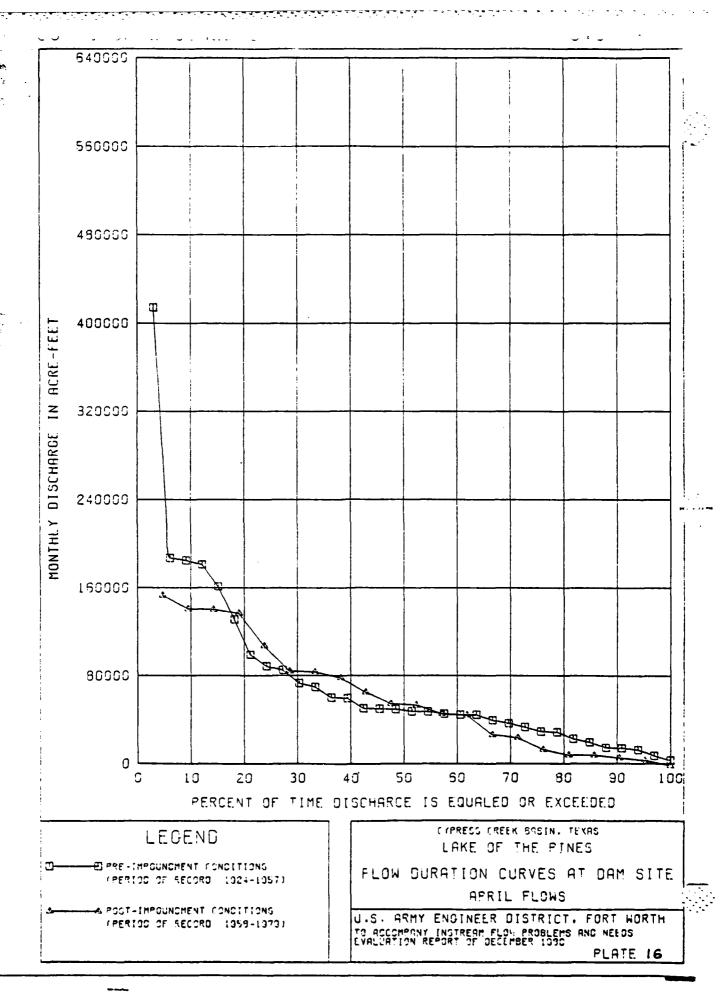
FLOW DURATION CURVES AT DAM SITE FEBRUARY FLOWS

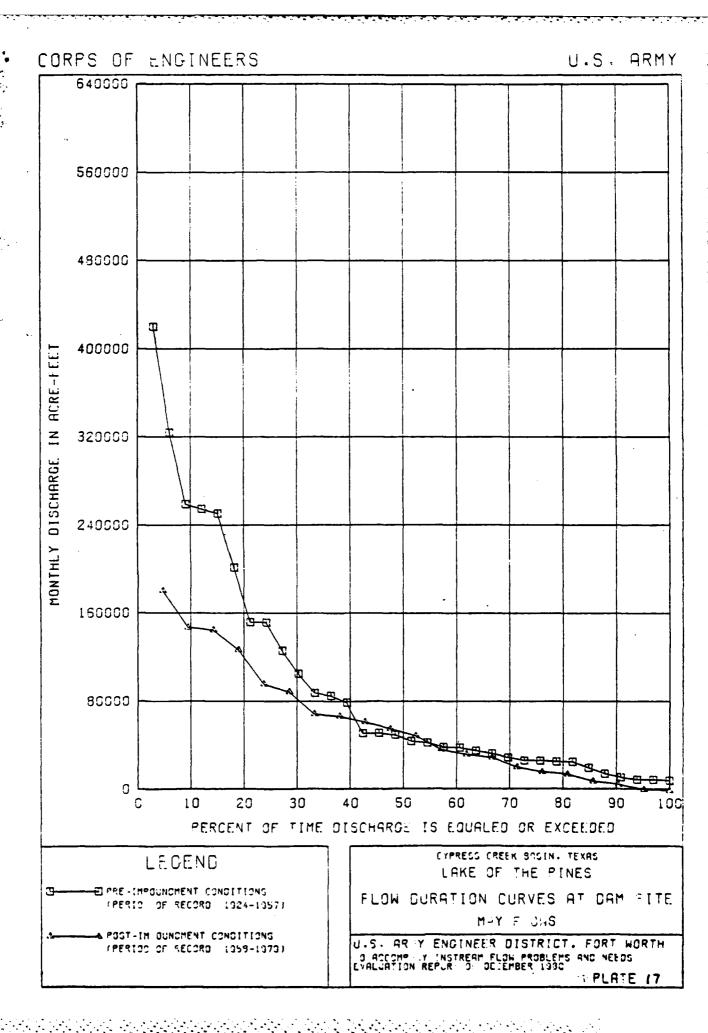
U.S. ARMY ENGINEER DISTRICT. FORT WORTH PLATE 14



TO ACCOMPANY INSTREAM FLOW PROBLEMS AND NEEDS EVALUATION REPORT OF DECEMBER 1990

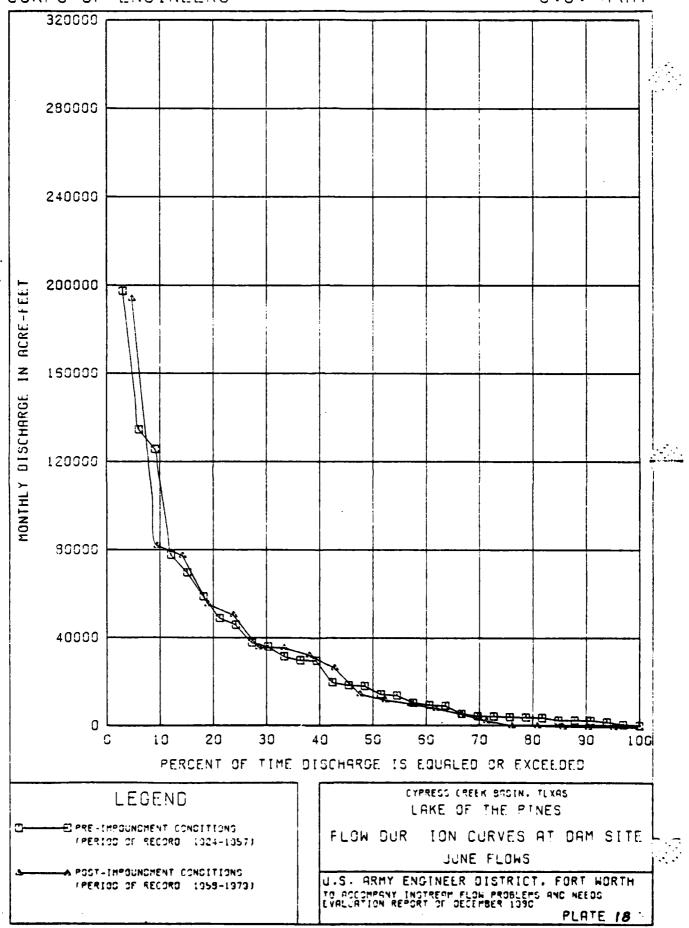
PLATE 15

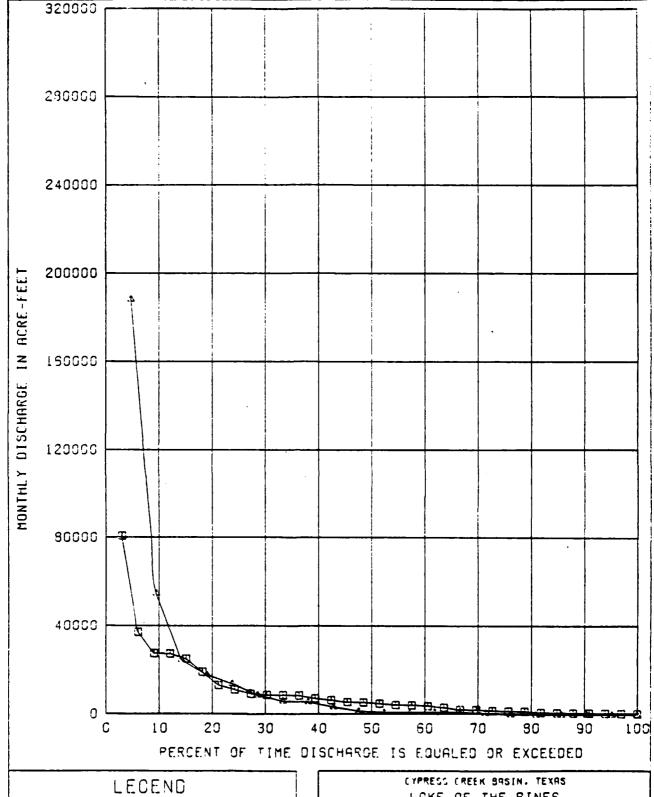






U.S. ARMY



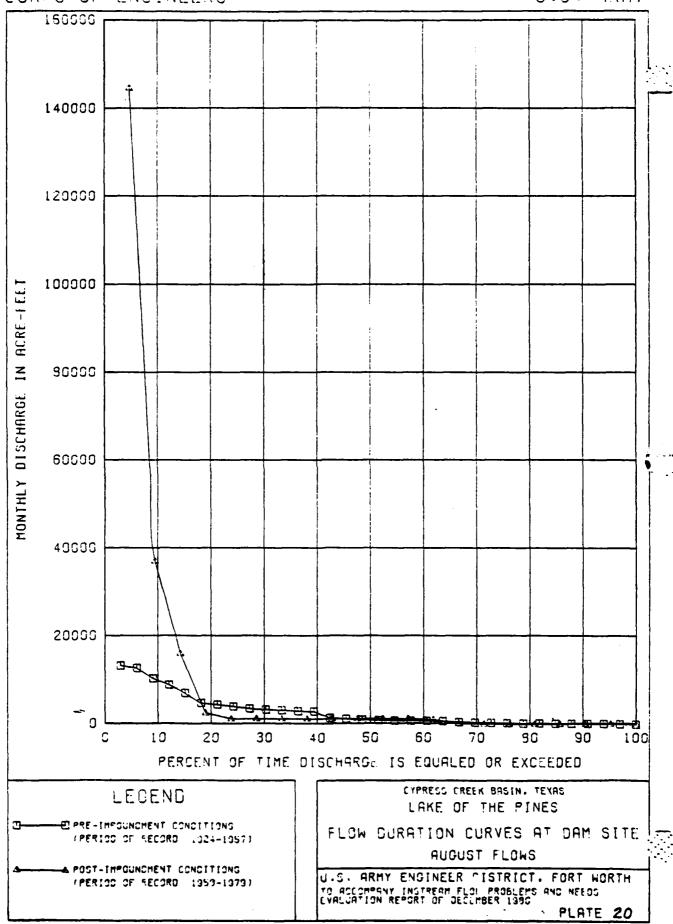


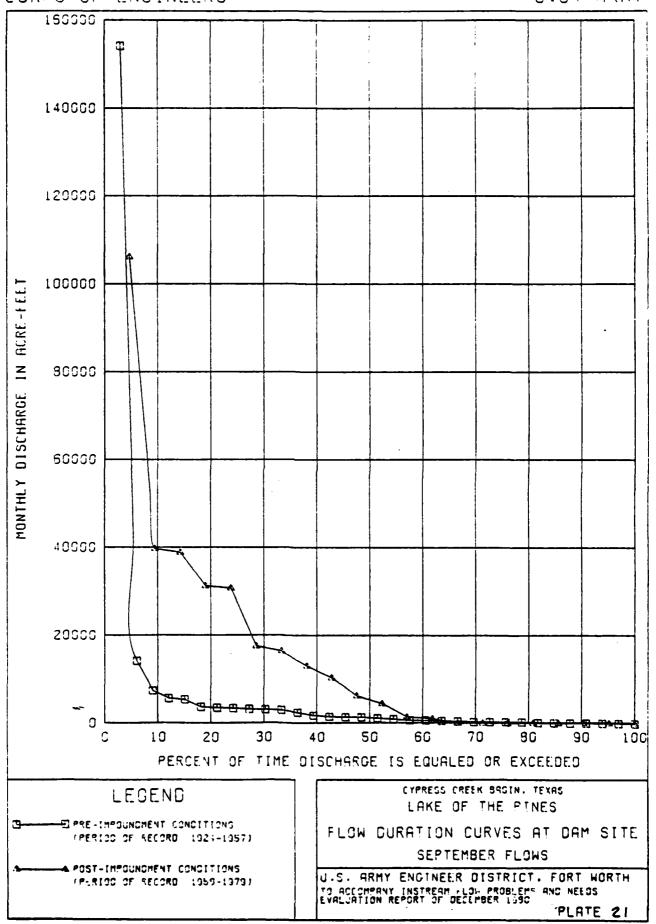
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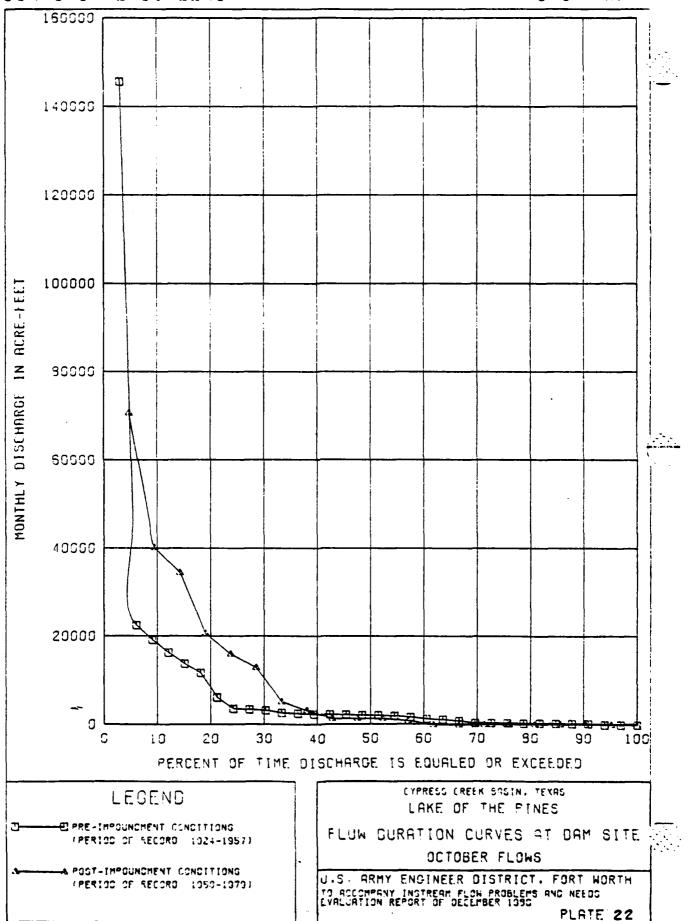
A POST-IMPOUNDMENT CONSITIONS (PERIOD OF RECORD (059-1973) LAKE OF THE PINES

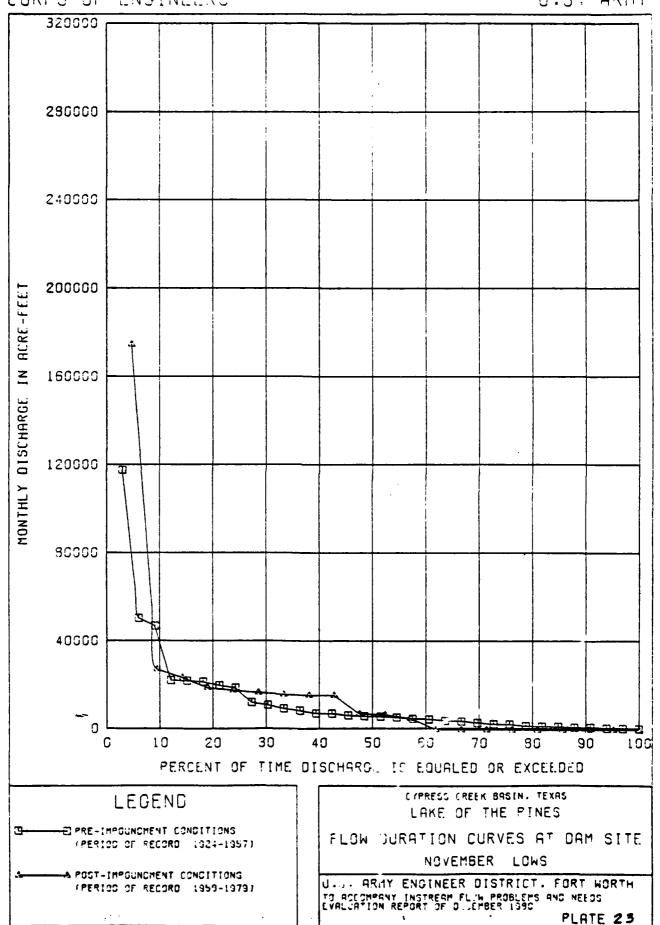
FLOW DURATION CURVES AT DAM SITE JULY FLOWS

U.S. ARMY ENGINEER DISTRICT. FORT WORTH PLATE 19









LEGEND

PRE-IMPOUNDMENT CONDITIONS

(PERIOD OF SECOND 1024-1957)

POST-IMPOUNDMENT CONDITIONS

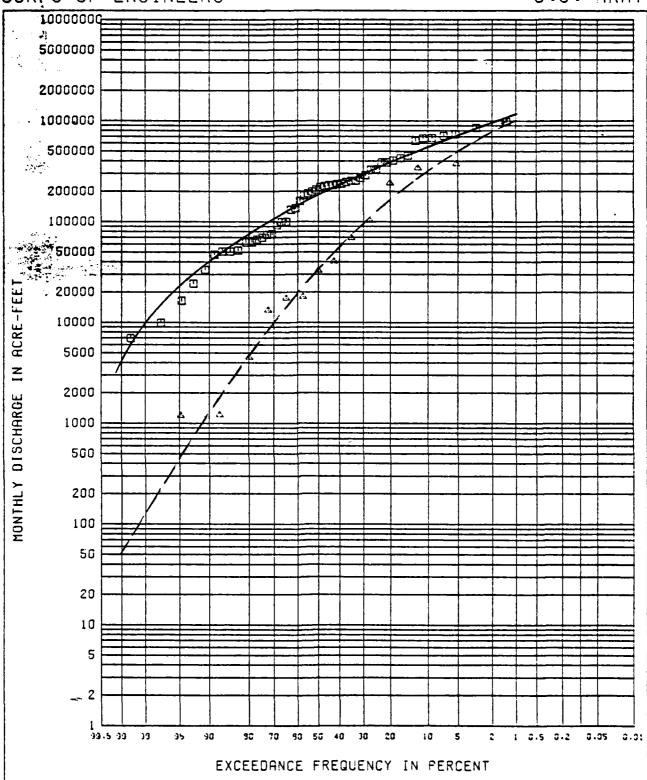
(PERIOD OF SECOND 1059-1979)

PERCENT OF TIME DISCHARGE IS EQUALED OR EXCEEDED

CYPRESS CREEK BASIN, TEXAS
LAKE OF THE PINES

FLOW DURATION CURVES AT DAM SITE DECEMBER FLOWS

U.S ARMY ENGINEER DISTRICT. FORT WORTH TO ACCOMPANY INSTREAM FLOW PROBLEMS AND NEEDS EVALUATION REPORT OF DECEMBER 1930 PLATE 24



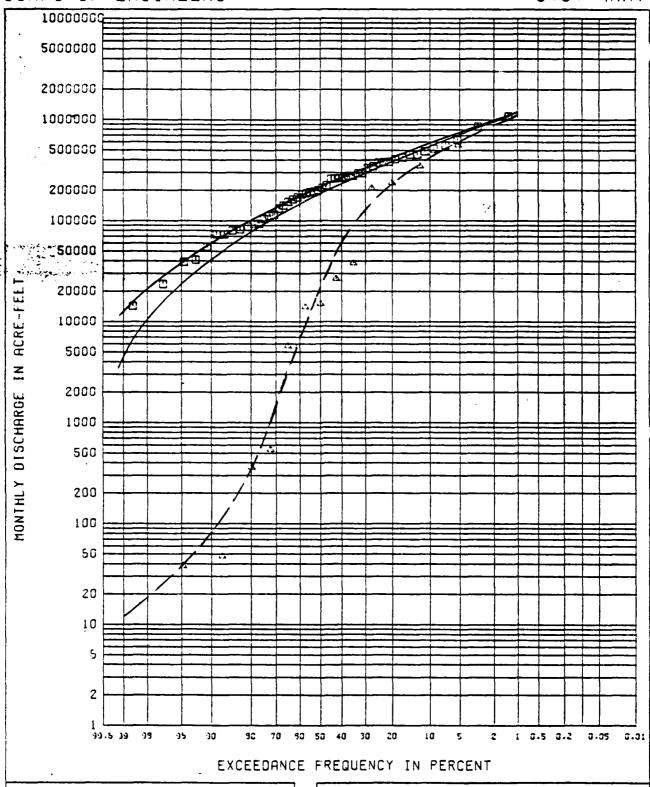
PRE-IMPOUNDMENT CONCITIONS (PERIOD OF RECORD 1909-1957)

-A POST-IMPOUNCHENT CONDITIONS (PERIOD OF RECORD 1965-1978)

NECHES RIVER BASIN. TEXAS SAM RAYBURN RESERVOIR DISCHARGE-FREQUENCY RELATIONS AT DAM SITE JANUARY FLOWS

U.S. ARMY ENGINEER DISTRICT. FORT HORTH (PERIOD OF RECORD 1965-1978)

TO ACCOMPANY INSTREM FLOW PROBLEMS AND NEEDS EVALUATION REPORT OF DECEMBER 1980 PLATE



PRE-IMPOUNCHENT CONDITIONS

(PERIOD OF RECORD 1909-1957)

PERIOD OF RECORD 1965-1979)

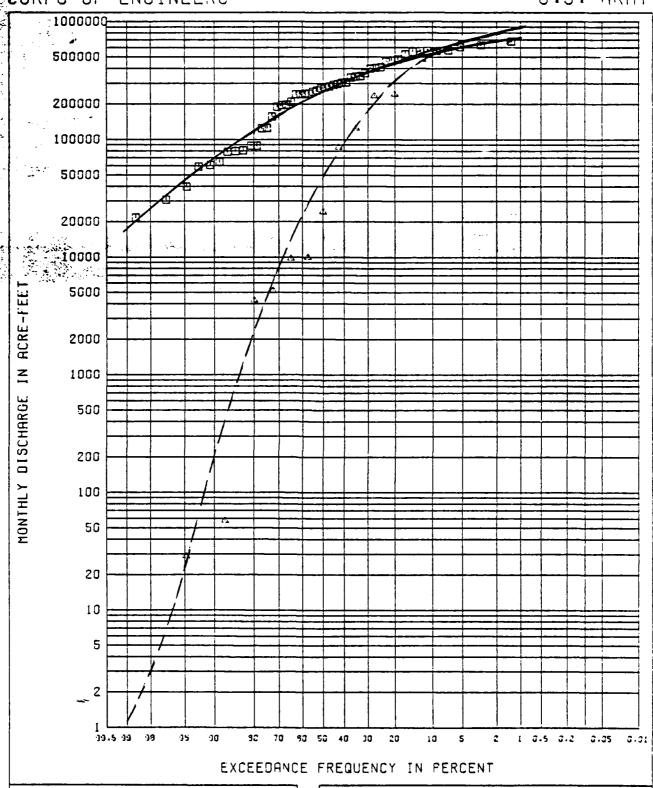
NECHES RIVER BASIN. TEXAS

SAM RAYBURN RESERVOIR

DISCHARGE-FREQUENCY RELATIONS
AT DAM SITE

FEBRUARY FLOWS

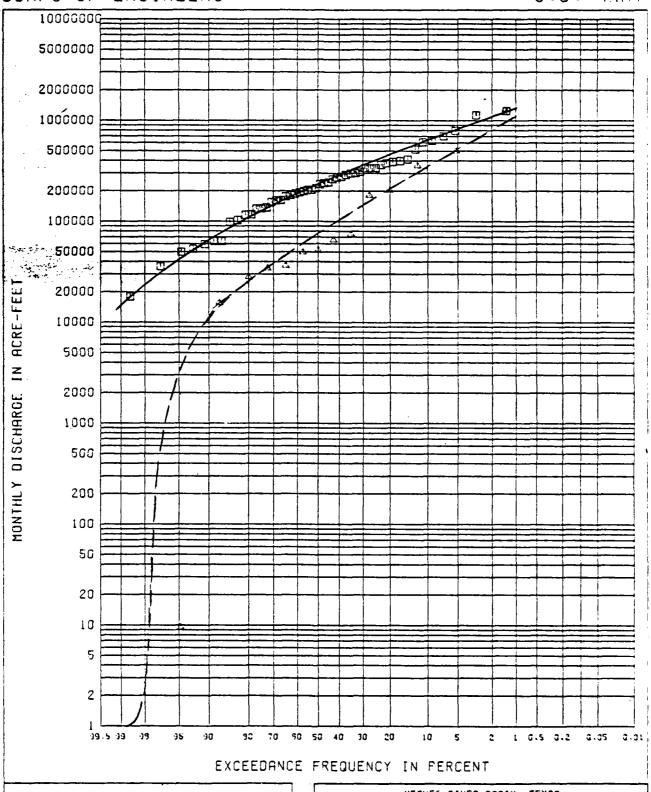
U.S. ARMY ENGINEER DISTRICT. FORT WORTH
TO ACCOMPANY INSTREAM FLOW PROBLEMS AND NEEDS
EVALUATION REPORT OF DECEMBER 1980
PLATE 2



PRE-IMPOUNDMENT CONDITIONS
(PERIOD OF RECORD 1909-1957)

- - - POST-IMPOUNCHENT CONCITIONS (PERIOS OF RECORD 1965-1978) NECHES RIVER BASIN. TEXAS
SAM RAYBURN RESERVOIR
DISCHARGE-FREQUENCY RELATIONS
AT DAM SITE
MARCH FLOWS

U.S. ARMY ENGINEER DISTRICT. FORT WORTH TO ACCOMPANY INSTREAM FLOW PROBLEMS AND NEEDS EVALUATION REPORT OF DECEMBER 1990. PLATE 3

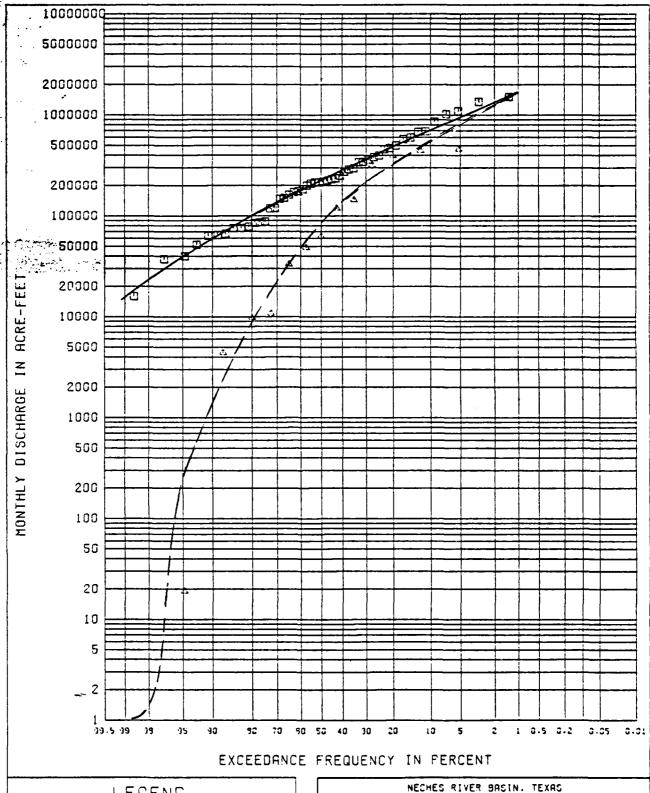


Pere-IMPOUNDMENT CONDITIONS
(PERIOD OF RECORD 1909-1957)

- - POST-IMPOUNDMENT CONDITIONS
(PERIOD OF RECORD 1965-1978)

NECHES RIVER BASIN. TEXAS
SAM RAYBURN RESERVOIR
DISCHARGE-FREQUENCY RELATIONS
AT DAM SITE
APRIL FLOWS

U.S. ARMY ENGINEER DISTRICT. FORT HORTH
TO ACCOMPANY INSTREMM FLOW PROBLEMS AND NEEDS
EVALUATION REPORT OF DECEMBER 1980
PLATE 4

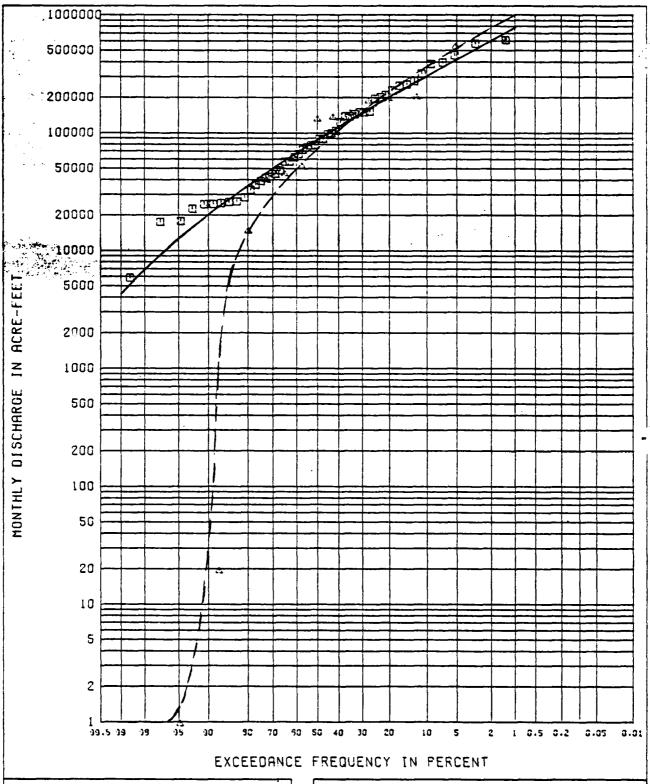


EPRE-IMPOUNDMENT CONDITIONS (PERIOD OF RECORD 1909-1957)

POST-IMPOUNCHENT CONSITIONS (PERIOD OF RECORD 1985-1979)

SAM RAYBURN RESERVOIR DISCHARGE-FREQUENCY RELATIONS AT DAM SITE MAY FLOWS

U.S. ARMY ENGINEER DISTRICT, FORT WORTH TO ACCOMPANY INSTREAM FLOW PROBLEMS AND NEEDS PLATE 5



PERIOD OF RECORD 1909-1957)

- - POST-IMPOUNDMENT CONDITIONS
(PERIOD OF RECORD 1965-1979)

NECHES RIVER BASIN. TEXAS

SAM RAYBURN RESERVOIR

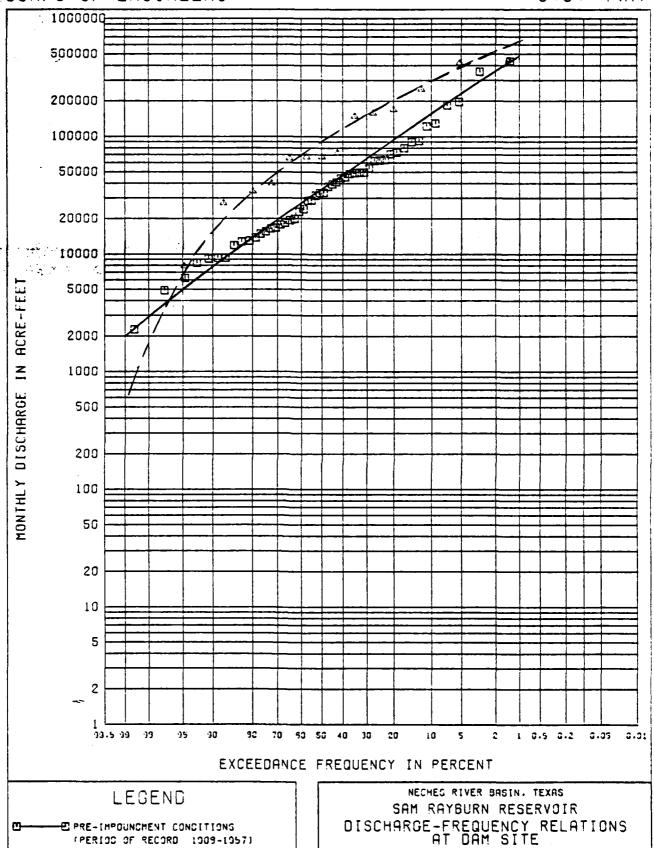
DISCHARGE-FREQUENCY RELATIONS
AT DAM SITE

JUNE FLOWS

U.S. ARMY ENGINEER DISTRICT. FORT WORTH
TO ACCOMPANY INSTREAM FLOW PROBLEMS AND NEEDS
EVALUATION REPORT OF DECEMBER 1980.
PLATE 6

♣ POST-IMPOUNCHENT CONCITIONS

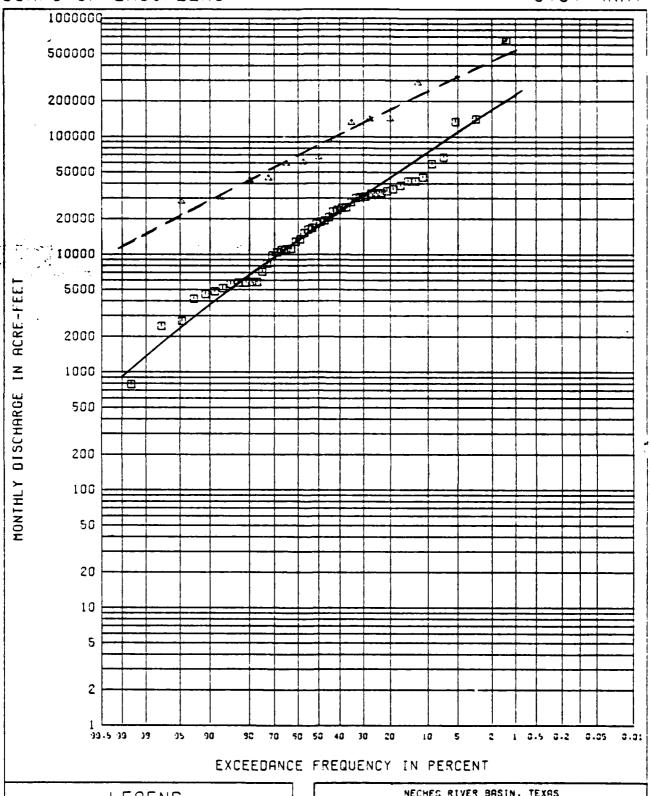
(PERIOD OF RECORD 1965-1978)



JULY FLOWS

U.S. ARMY ENGINEER DISTRICT. FORT WORTH

TO ACCOMPANY INSTREAM FLOW PROBLEMS AND NEEDS EVALUATION REPORT OF DECEMBER 1980 - PLATE 7



PRE-IMPOUNDMENT CONDITIONS

(PERIOD OF RECORD 1909-1957)

A- - A POST-IMPOUNDMENT CONDITIONS
(PERIOD OF RECORD 1965-1978)

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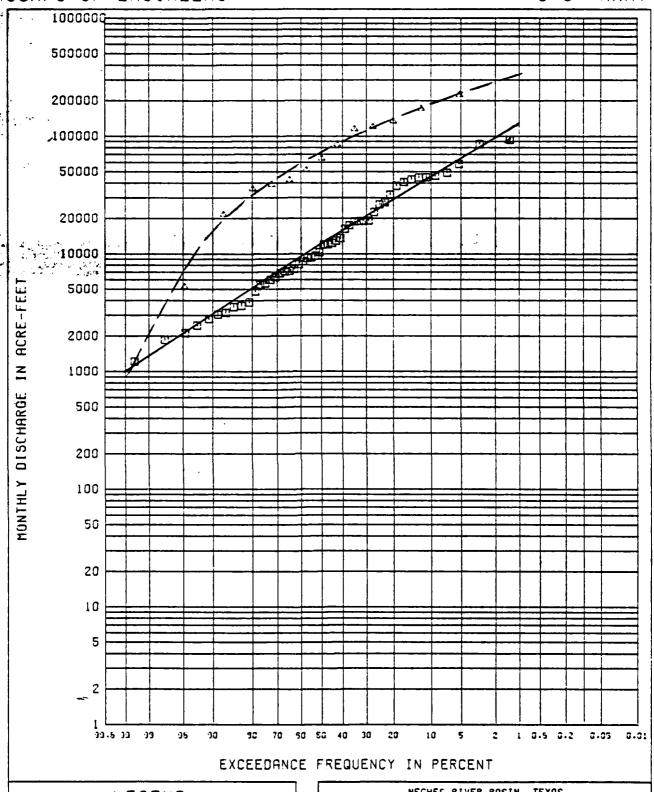
NECHES RIVER BRSIN. TEXAS

SAM RAYBURN RESERVOIR

DISCHARGE-FREQUENCY RELATIONS
AT DAM SITE

AUGUST FLOWS

U.S. ARMY ENGINEER DISTRICT. FORT WORTH
TO ACCOMPANY INSTREAM FLOW PROBLEMS AND NEEDS
EVALUATION REPORT OF DECEMBER 1980. PLATE 8



PRE-IMPOUNDMENT CONCITIONS
(PERIOD OF RECORD 1009-1057)

POST-IMPOUNDMENT CONDITIONS

(PERIOD OF RECORD 1965-1978)

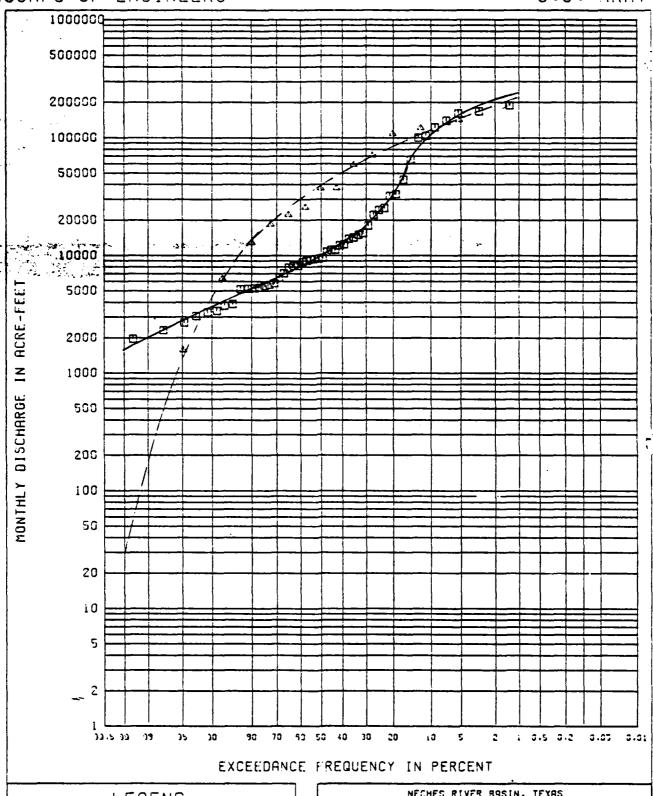
NECHES RIVER BASIN. TEXAS

SAM RAYBURN RESERVOIR

DISCHARGE-FREQUENCY RELATIONS
AT DAM SITE

SEPTEMBER FLOWS

U.S. ARMY ENGINEER DISTRICT. FORT WORTH
TO ACCOMPANY INSTREAM FLOW PROBLEMS AND NEEDS
EVALUATION REPORT OF DECEMBER 1980.
PLATE 9



PRE-IMPOUNDMENT CONDITIONS (PERIOD OF RECORD 1009-1087)

- - - POST-IMPOUNDMENT CONDITIONS
(PERIOD OF RECORD 1985-1979)

NECHES RIVER BRSIN. TEXAS

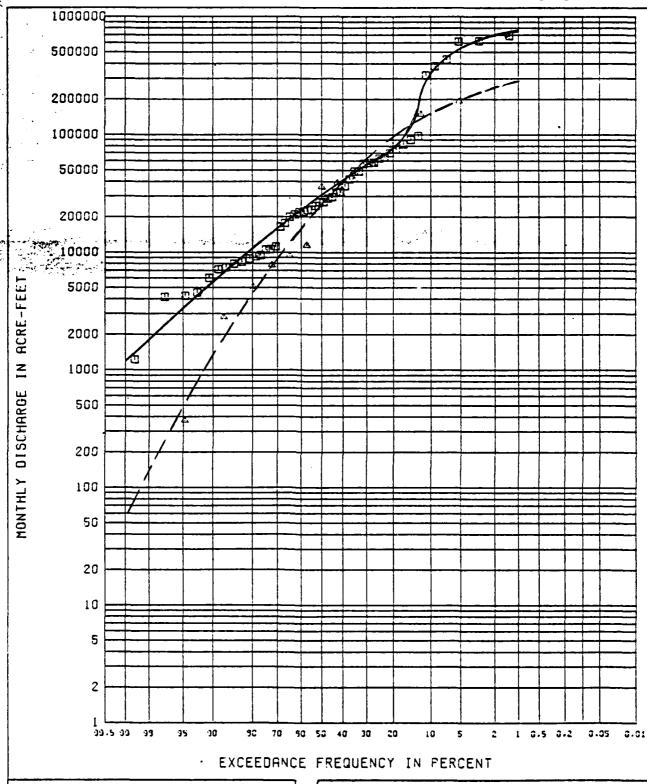
SAM RAYBURN RESERVOIR

DISCHARGE-FREQUENCY RELATIONS

AT DAM SITE

OCTOBER FLOWS

U.S. ARMY ENGINEER DISTRICT, FORT WORTH TO ACCOMPANY INSTREAM FLOW PROBLEMS AND NEEDS EVALUATION REPORT OF DECEMBER 1980.



PERIOD OF RECORD 1909-1957)

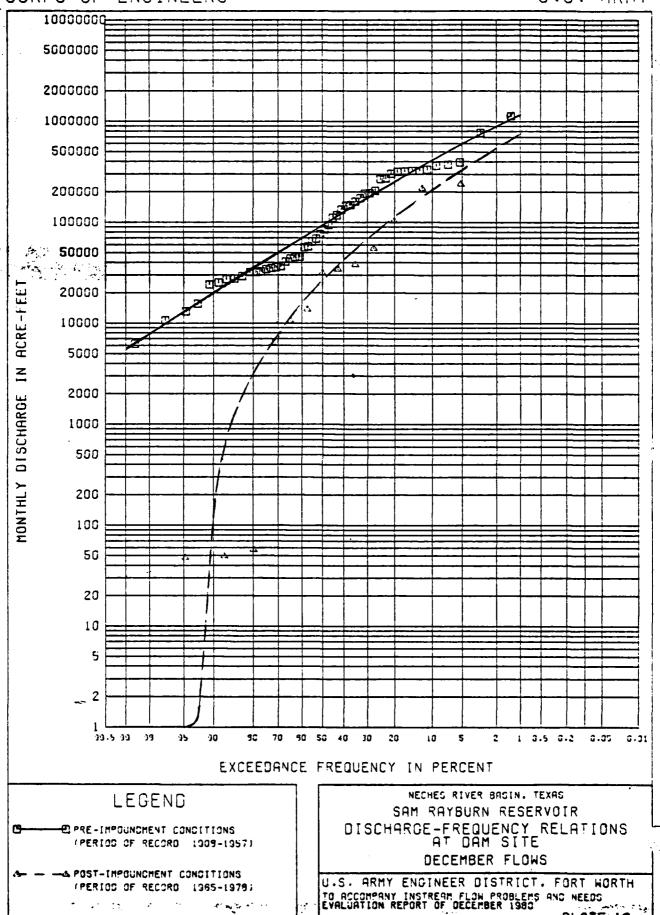
- -> POST-IMPOUNCHENT CONCITIONS

(PERIOD OF RECORD 1965-1978)

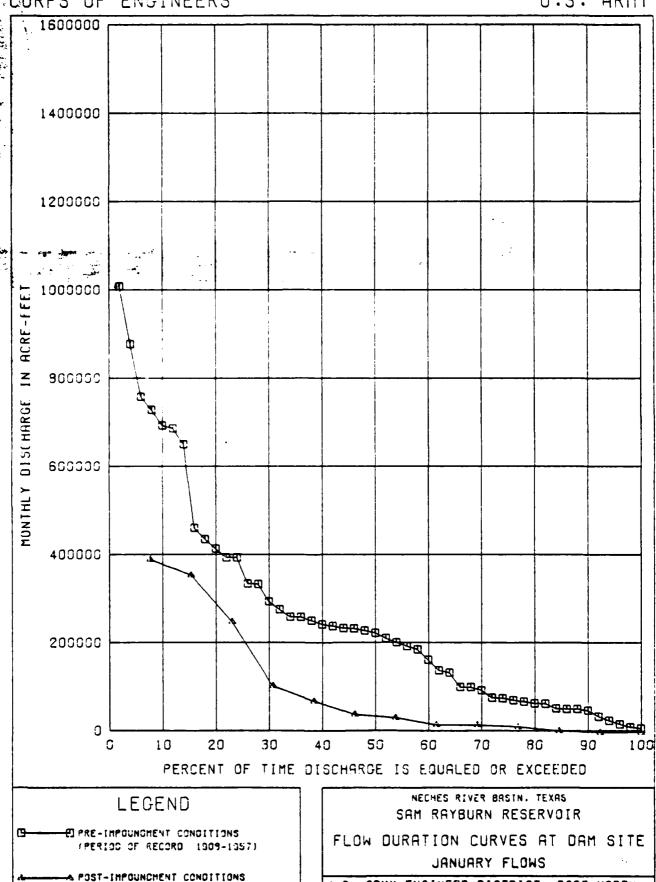
NECHES RIVER BASIN, TEXAS
SAM RAYBURN RESERVOIR
DISCHARGE-FREQUENCY RELATIONS
AT DAM SITE
NOVEMBER FLOWS

U.S. ARMY ENGINEER DISTRICT. FORT WORTH TO ACCOMPANY INSTREAM FLOW PROBLEMS AND MEEDS EVALUATION REPORT OF DECEMBER 1980 PLATE 1

PLATE 12



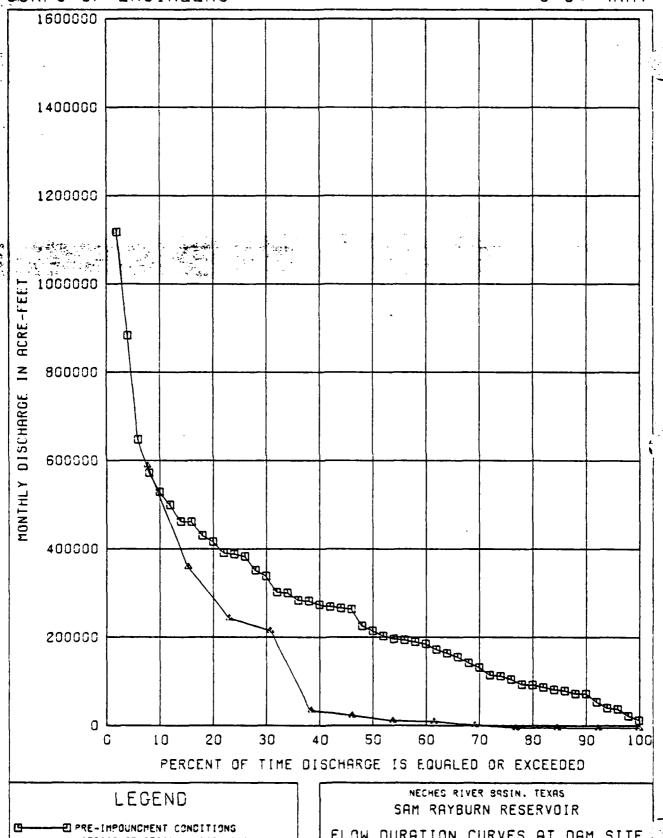
IPERIOD OF RECORD 1965-1979;



U.S. ARMY ENGINEER DISTRICT. FORT WORTH

TO ACCOMPANY INSTREM FLOW PROBLEMS AND NEEDS EVALUATION REPORT OF DECEMBER 1990



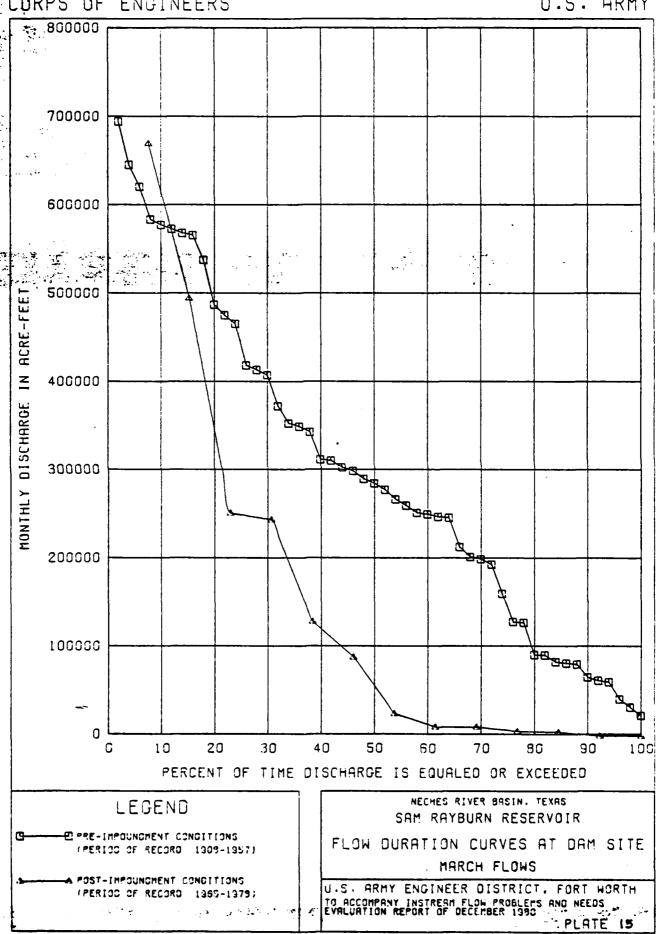


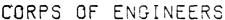
9 PRE-IMPOUNDMENT CONDITIONS
(PERIOD OF RECORD 1909-1957)

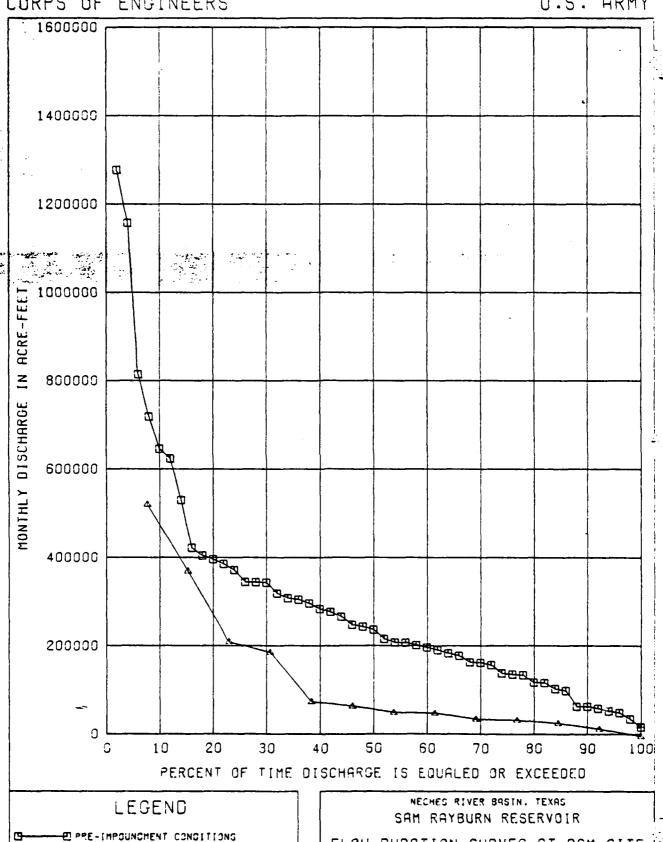
POST-IMPOUNDMENT CONDITIONS
/PERIOD OF RECORD 1965-1979;

FLOW DURATION CURVES AT DAM SITE FEBRUARY FLOWS

U.S. ARMY ENGINEER DISTRICT. FORT WORTH TO ACCOMPANY INSTREMT FLOW PROBLEMS AND NEEDS EVALUATION REPORT OF DECEMBER 1990 PLATE 14



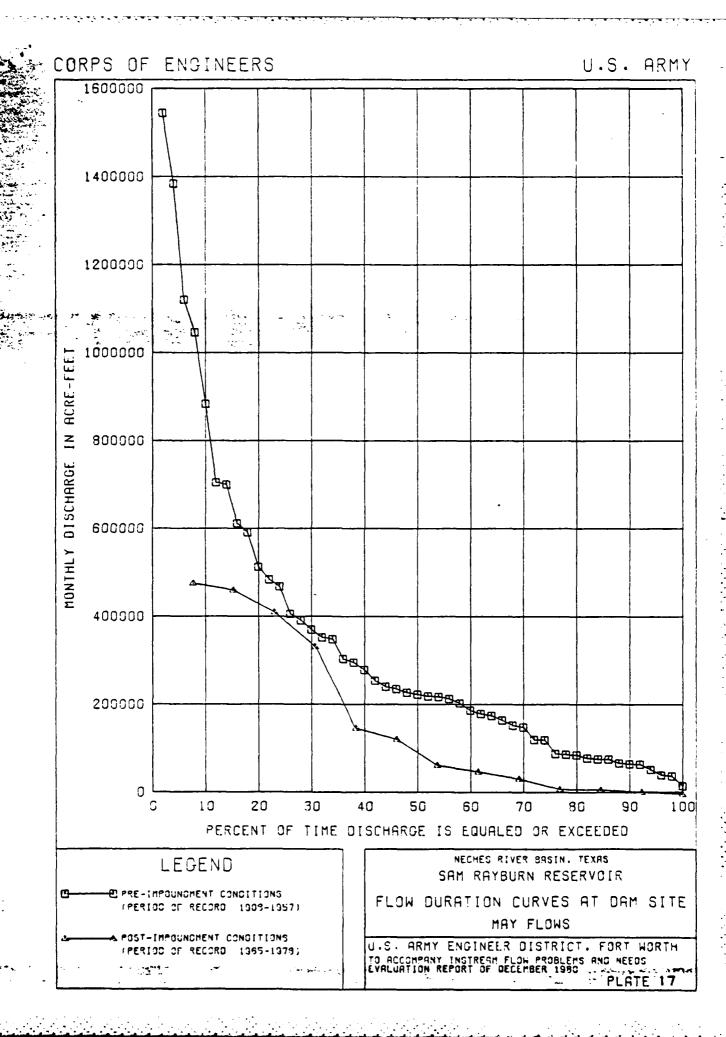




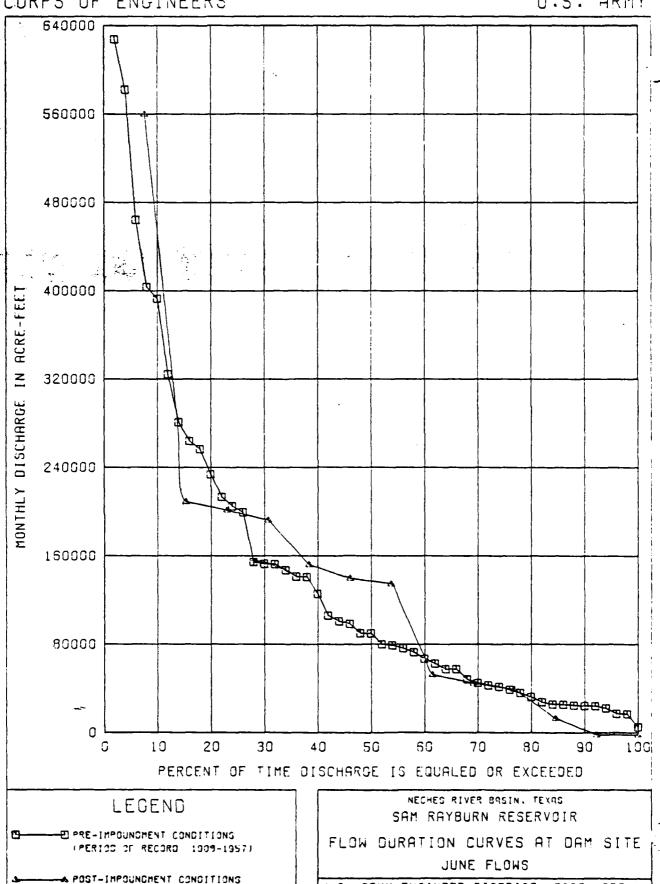
e PRE-IMPOUNCHENT CONDITIONS (PERIOD OF RECORD 1009-1057)

SMCITIONS THEOUNDRUDGHILDERS (PERIOD OF RECORD 1065-1979) FLOW DURATION CURVES AT DAM SITE I APRIL FLOWS

PLATE 16



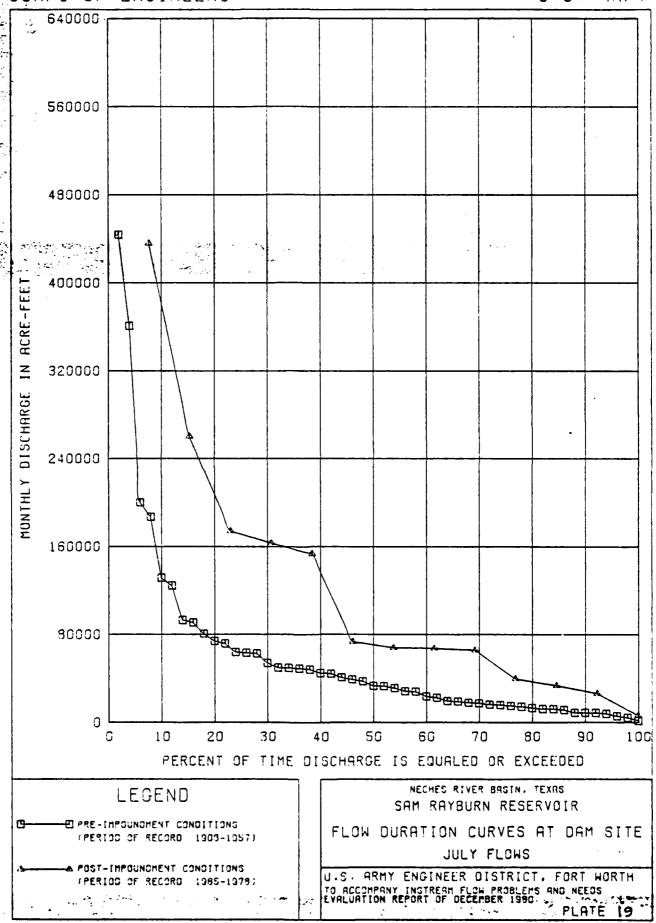
(PERIOD OF SECOND 1965-1979)



ARMY ENGINEER DISTRICT. FORT WORTH

PLATE 18

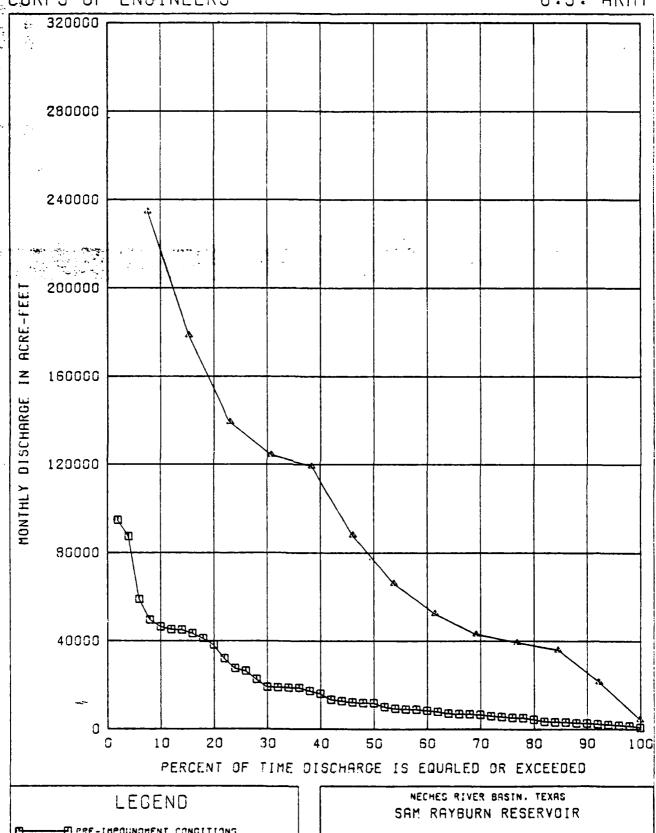
TO ACCOMPANY INSTREAM FLOW PROBLETS AND NEEDS EVALUATION REPORT OF DECEMBER 1990



TO ACCOMPANY INSTREAM FLOW PROBLEMS AND NEEDS EVALUATION REPORT OF DECEMBER 1980

(PERIOD OF RECORD 1985-1978)



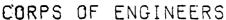


PRE-IMPOUNDMENT CONDITIONS
(PERIOD OF RECORD 1909-1997)

→ POST-IMPOUNDMENT CONCITIONS
(PERIOD OF RECORD 1985-1979)

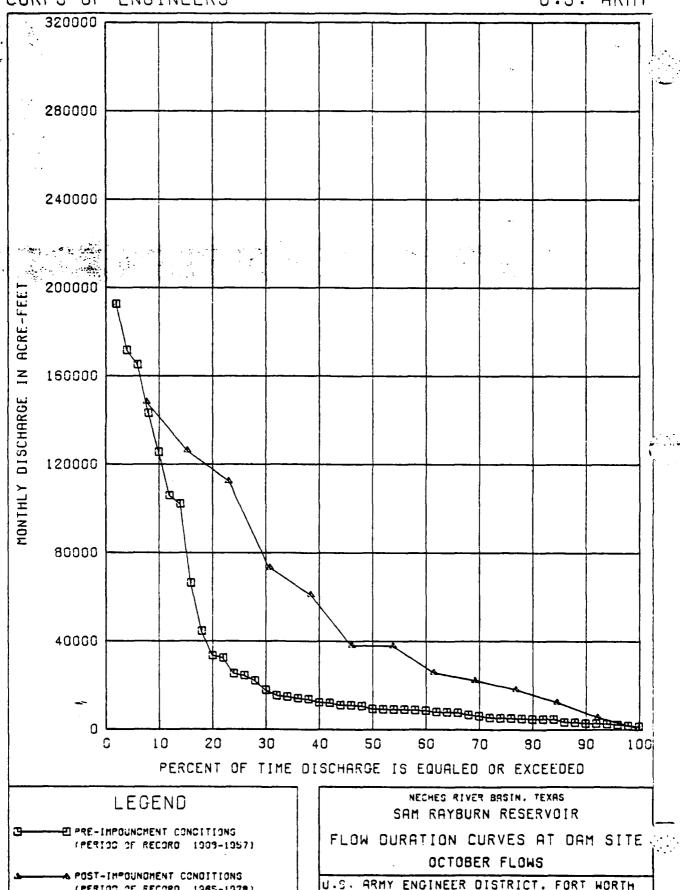
FLOW DURATION CURVES AT DAM SITE SEPTEMBER FLOWS

U.S. ARMY ENGINEER DISTRICT. FORT HORTH
TO ACCOMPANY INSTREAM FLOW PROBLEMS AND MEEDS
EVALUATION REPORT OF DECEMBER 1990
PLATE 21

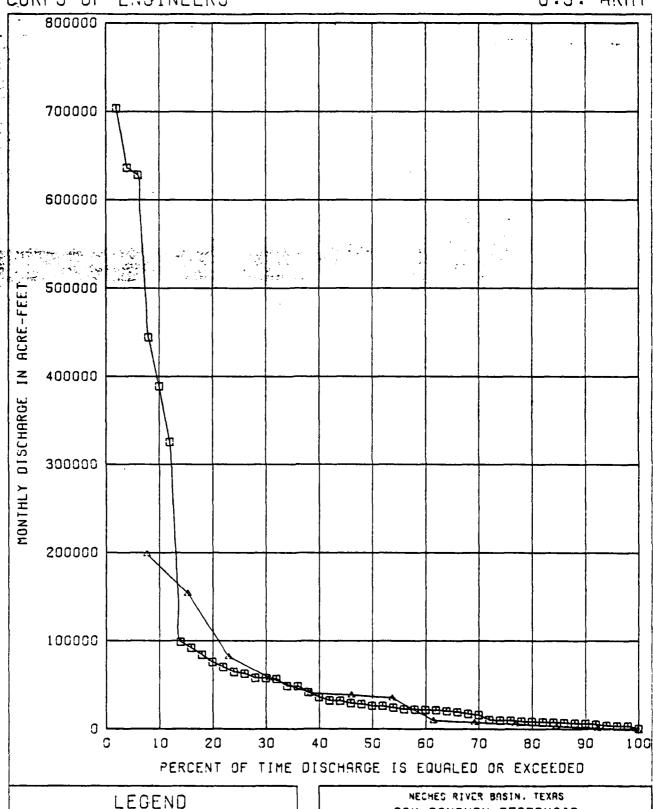


(PERIOD OF RECORD 1965-1978)

U.S. ARMY



TO ACCOMPANY INSTREM FLOW PROBLEMS AND NEEDS EVALUATION REPORT OF DECEMBER 1990 PLATE 22



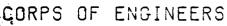
E PRE-IMPOUNCHENT CONCITIONS PERIOD OF RECORD 1908-1957)

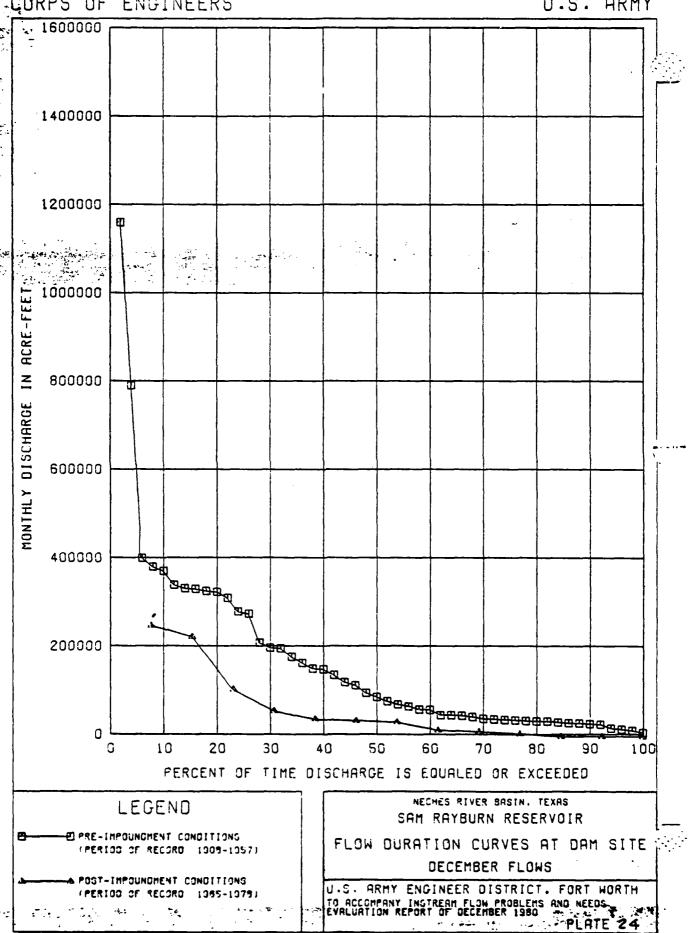
POST-INFOUNCHENT CONDITIONS

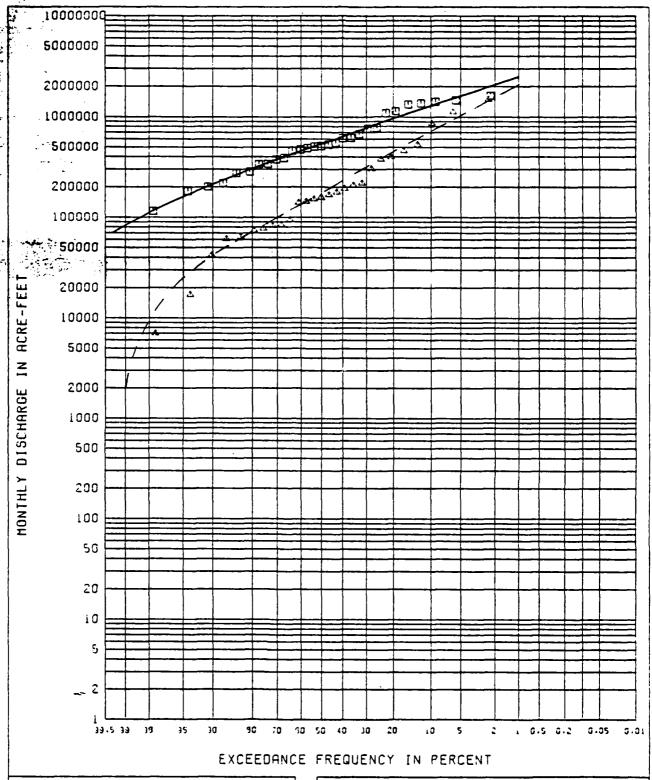
SAM RAYBURN RESERVOIR

FLOW DURATION CURVES AT DAM SITE NOVEMBER FLOWS

U.S. ARMY ENGINEER DISTRICT. FORT WORTH TO ACCOMPANY INSTREM FLOW PROBLEMS AND NEEDS EVALUATION REPORT OF DECEMBER 1980 PLATE 23







PRE-IMPOUNCHENT CONCITIONS
(PERIOD OF RECORD 1021-1050)

- -- POST-IMPOUNDMENT CONDITIONS
(PERIOD OF RECORD 1952-1979)

NECHES RIVER BASIN. TEXAS

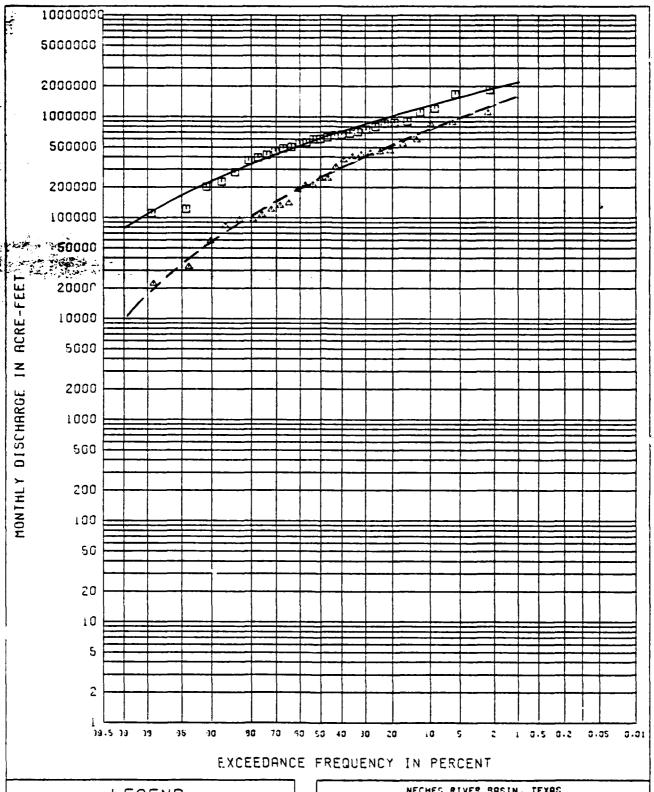
B.A. STEINHAGEN LAKE

DISCHARGE-FREQUENCY RELATIONS

AT DAM SITE

JANUARY FLOWS

U.S. ARMY ENGINEER DISTRICT. FORT WORTH
TO ACCOMPANY INSTREAM FLOW PROBLEMS AND NEEDS
EVALUATION REPORT OF DECEMBER 1980.



PRE-IMPOUNDMENT CONGITIONS
(PERIOD OF RECORD 1921-1950)

- - POST-IMPOUNDMENT CONDITIONS
(PERIOD OF RECORD 1952-1978)

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NECHES RIVER BASIN. TEXAS

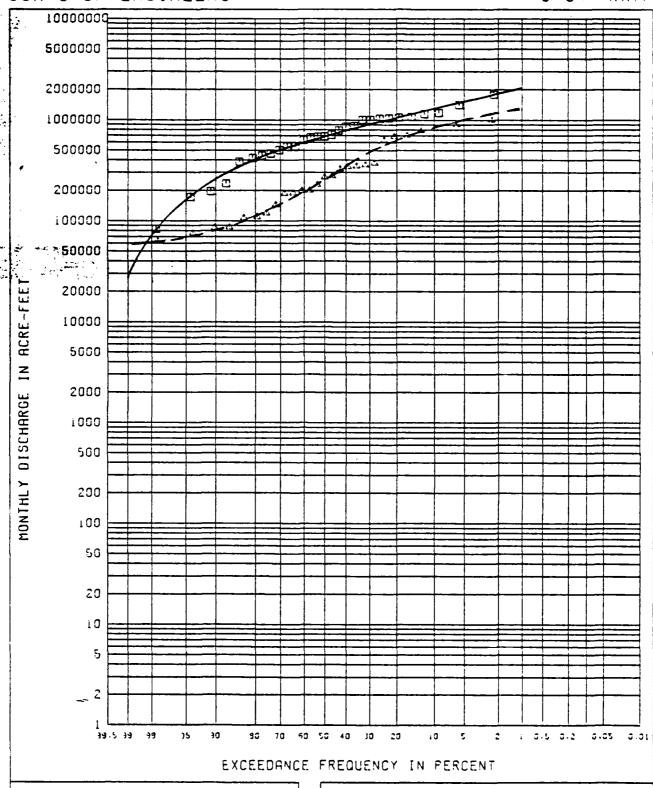
B.A. STEINHAGEN LAKE

DISCHARGE-FREQUENCY RELATIONS

AT DAM SITE

FEBRUARY FLOWS

U.S. ARMY ENGINEER DISTRICT. FORT HORTH TO RECOMPANY INSTREAM FLOW PROBLEMS AND NEEDS EVALUATION REPORT OF DECEMBER 1980 PLATE 2



PRE-IMPOUNDMENT CONDITIONS

(PERIOD OF RECORD 1921-1950)

- - POST-IMPOUNDMENT CONDITIONS (PERIOD OF RECORD 1952-1979)

NECHES RIVER BASIN. TEXAS

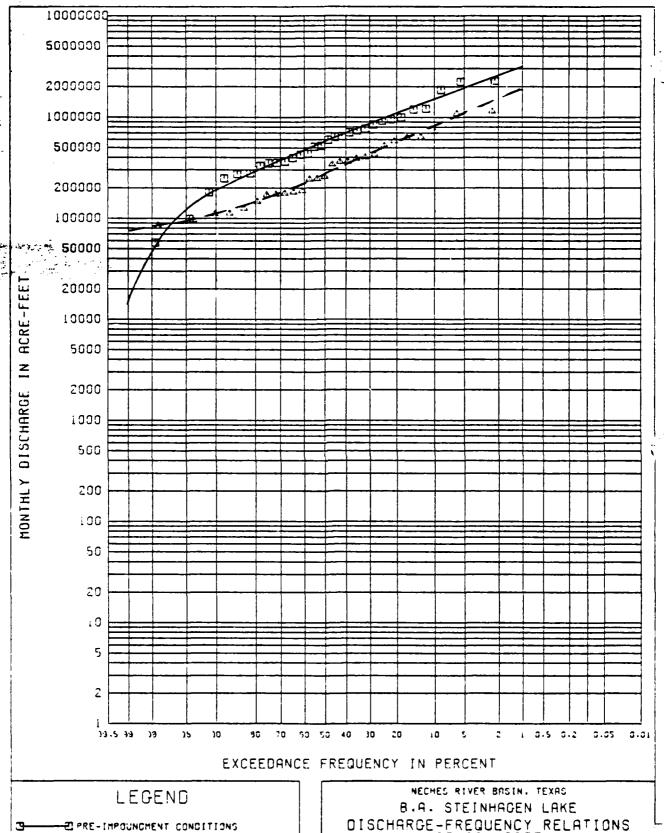
B.A. STEINHAGEN LAKE

DISCHARGE-FREQUENCY RELATIONS

AT DAM SITE

MARCH FLOWS

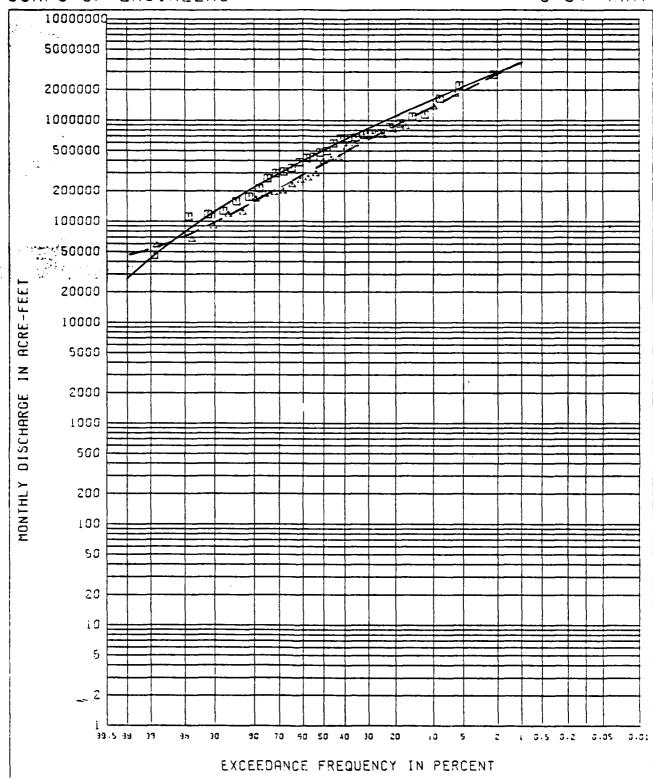
U.S. ARMY ENGINEER DISTRICT, FORT WORTH TO ACCOMPANY INSTREAM FLOW PROBLEMS AND MEEDS EVALUATION REPORT OF DECEMBER 1980 PLATE 3



(PERIOD OF RECORD 1921-1950)

POST-IMPOUNDMENT CONDITIONS (PERIOD OF RECORD 1952-1979) DISCHARGE-FREQUENCY RELATIONS AT DAM SITE APRIL FLOWS

U.S. ARMY ENGINEER DISTRICT. FORT WORTH TO RECEMPANY INSTREAM FLOW PROBLEMS AND NEEDS



PRE-IMPOUNDMENT CONDITIONS

(PERIOD OF RECORD 1921-1950)

► → → POST-IMPOUNDMENT CONDITIONS
(PERIOD OF RECORD 1952-1978)

NECHES RIVER BASIN. TEXAS

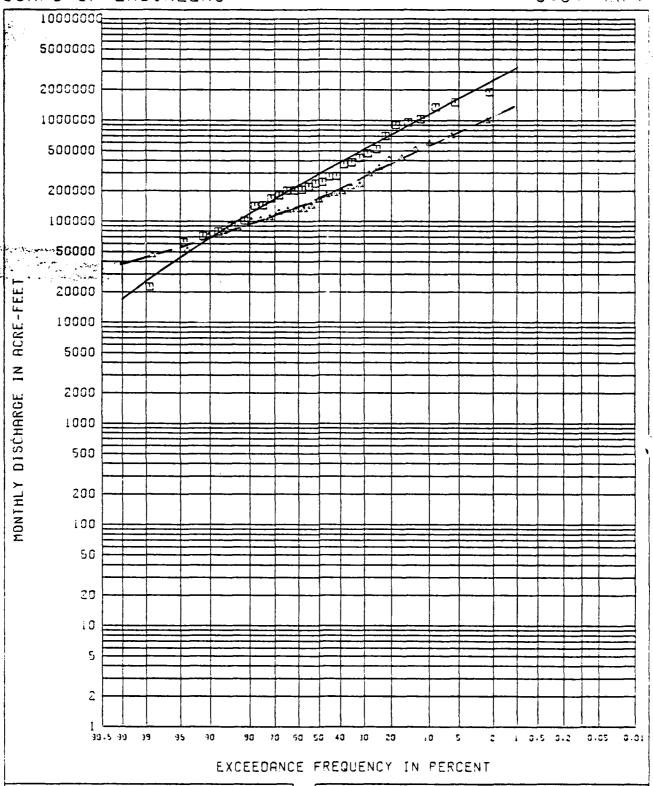
B.A. STEINHAGEN LAKE

DISCHARGE-FREQUENCY RELATIONS

AT DAM SITE

MAY FLOWS

U.S. ARMY ENGINEER DISTRICT. FORT WORTH
TO ACCOMPANY INSTREAM FLOW PROBLEMS AND NEEDS
EVALUATION REPORT OF DECEMBER 1980
PLATE 5



- - A POST-IMPOUNDMENT CONDITIONS
(PERIOD OF RECORD (1952-1979)

NECHES RIVER BASIN. TEXAS

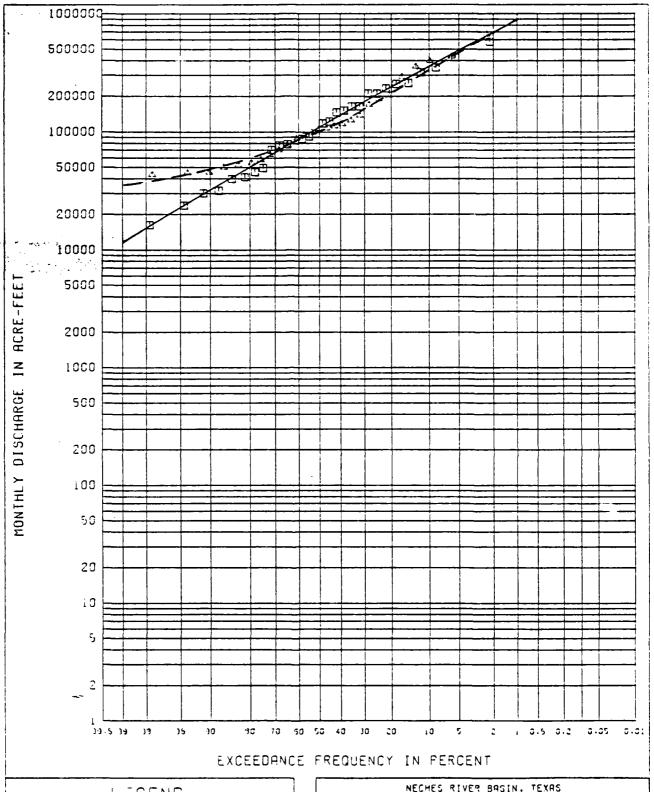
B.A. STEINHAGEN LAKE

DISCHARGE-FREQUENCY RELATIONS

AT DAM SITE

JUNE FLOWS

U.S. ARMY ENGINEER DISTRICT. FORT WORTH
TO ACCOMPANY INSTREAM FLOW PROBLEMS AND NEEDS
EVALUATION REPORT OF DECEMBER 1990
PLATE 6



PRE-IMPOUNDMENT CONDITIONS
(PERIOD OF RECORD 1921-1950)

- - - POST-IMPOUNDMENT COMDITIONS
(PERIOD OF RECORD 1352-1379)

NECHES RIVER BASIN. TEXAS

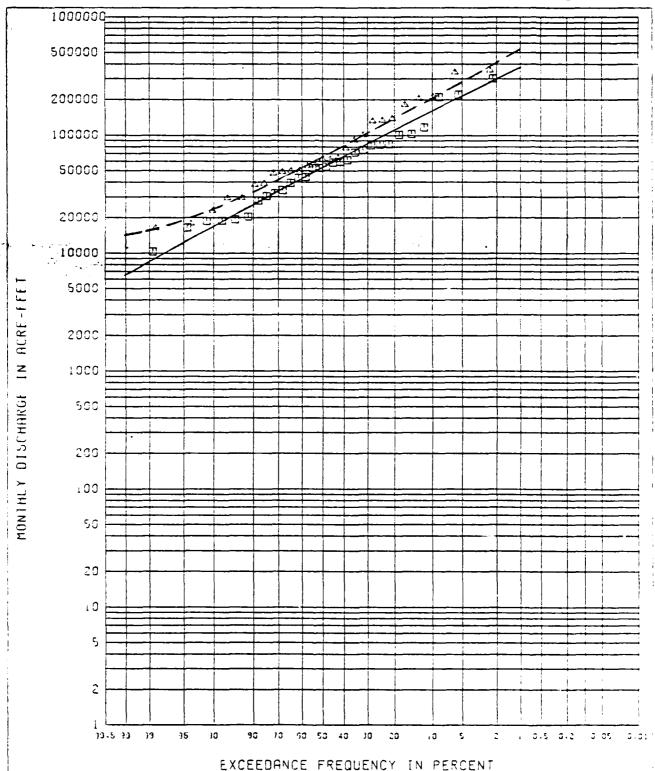
B.A. STEINHAGEN LAKE

DISCHARGE-FREQUENCY RELATIONS

AT DAM SITE

JULY FLOWS

U.S. ARMY ENGINEER DISTRICT. FORT WORTH TO ACCOMPANY INSTREAM FLOW PROBLEMS AND NEEDS EVALUATION REPORT OF DECEMBER 1980.



PRE-IMPOUNDMENT CONDITIONS

(PERIOD OF RECORD 1921-1956)

- - - POST-IMPOUNDMENT CONDITIONS
(FERIOD OF RECORD (1952-1979)

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NECHES RIVER BASIN. TEXAS

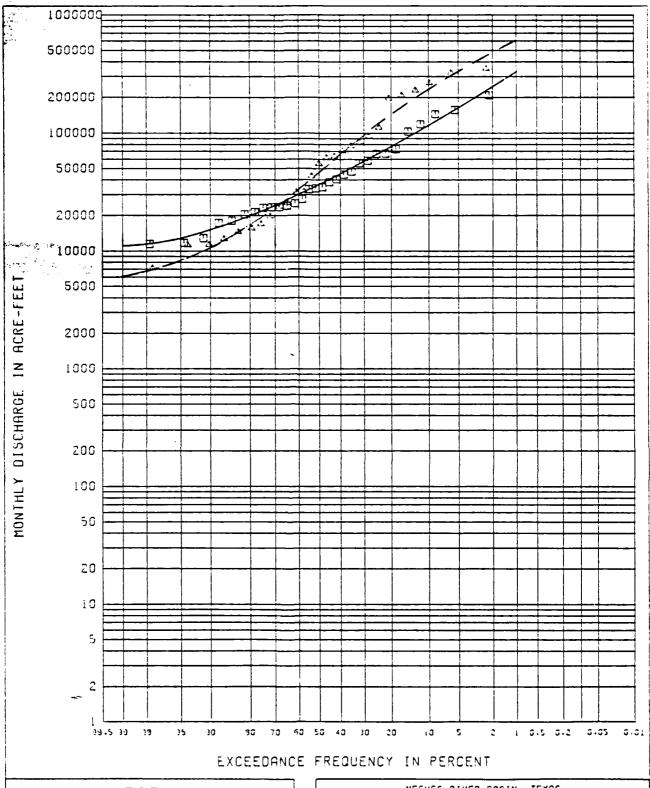
B.A. STEINHAGEN LAKE

DISCHARGE-FREQUENCY RELATIONS

AT DAM SITE

AUGUST FLOWS

U.S. ARMY ENGINEER DISTRICT. FORT WORTH
TO ACCOMPANY INSTREAM FLOW PROBLEMS AND MEEDS
EVALUATION REPORT OF DECEMBER 1980 PLATE 8



PRE-IMPOUNDMENT CONDITIONS

(PERIOD OF RECORD 1921-1950)

— → POST-IMPOUNDMENT CONDITIONS

(PERIOD OF RECORD 1952-1979)

NECHES RIVER BOSIN, TEXAS

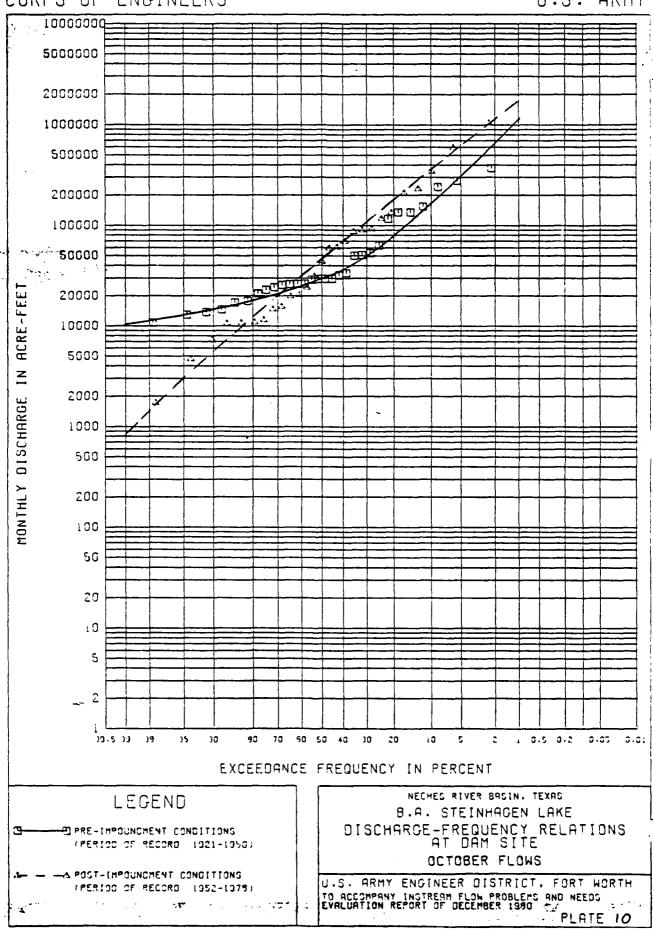
B.A. STEINHAGEN LAKE

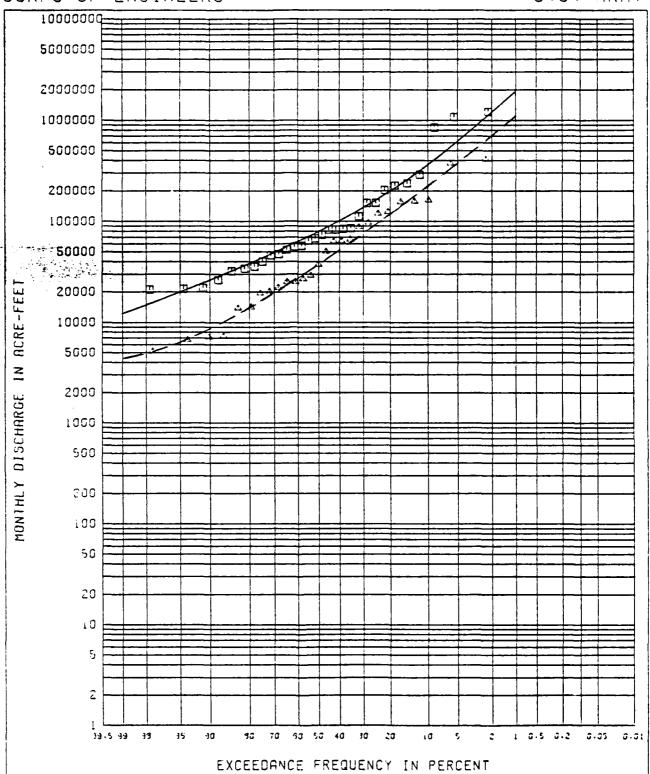
DISCHARGE-FREQUENCY RELATIONS

AT DAM SITE

SEPTEMBER FLOWS

U.S. ARMY ENGINEER DISTRICT. FORT WORTH TO ACCOMPANY INSTREAM FLOW PROSLEMS AND NEEDS EVALUATION REPORT OF DECEMBER 1980 PLATE 9





PRE-IMPOUNDMENT CONDITIONS (PERIOD OF RECORD 1921-1950)

- - A POST-IMPOUNDMENT CONDITIONS
(PERIOD OF RECORD 1952-1978)

NECHES RIVER BASIN. TEXAS

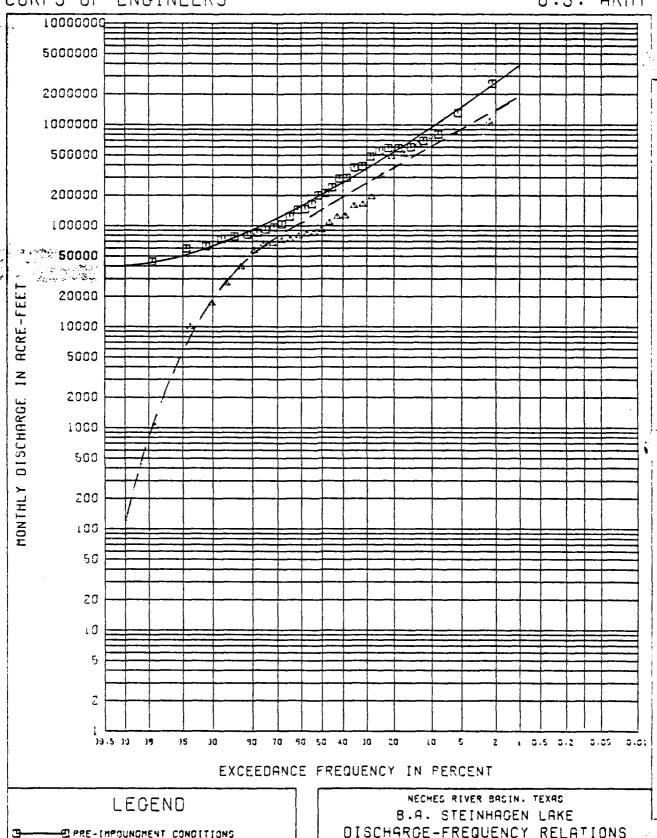
B.A. STEINHAGEN LAKE

DISCHARGE-FREQUENCY RELATIONS

AT DAM SITE

NOVEMBER FLOWS

U.S. ARMY ENGINEER DISTRICT. FORT WORTH
TO ACCOMPANY INSTREAM FLOW PROBLEMS AND NEEDS
EVALUATION REPORT OF DECEMBER 1980
PLATE 11



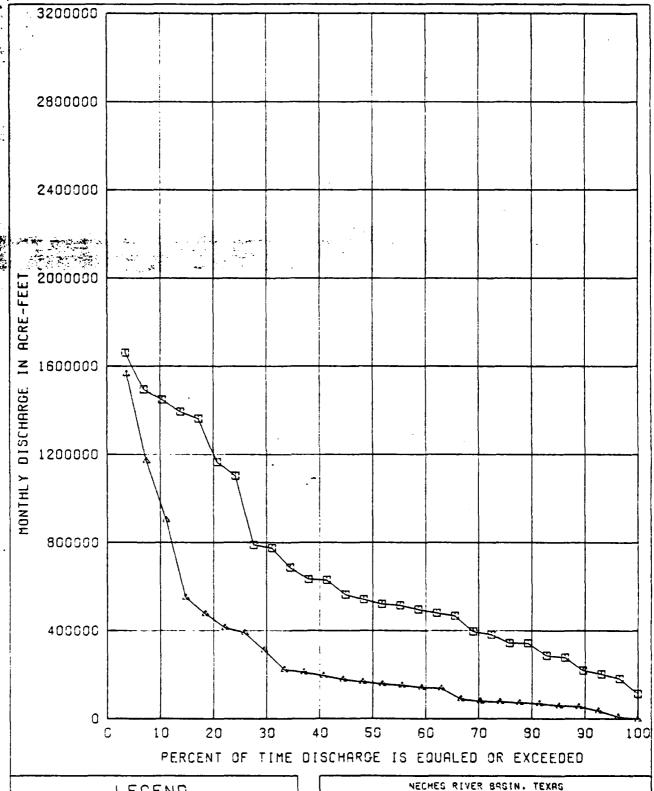
A POST-IMPOUNCHENT CONDITIONS (PERIOD OF RECORD 1952-1979)

(PERIOD OF RECORD 1321-1350)

DISCHARGE-FREQUENCY RELATIONS AT DAM SITE DECEMBER FLOWS

U.S. ARMY ENGINEER DISTRICT. FORT WORTH TO RECEMPANY INSTREAM FLOW PROBLEMS AND NEEDS EVALUATION REPORT OF DECEMBER 1980 - PLATE 12





LEGEND

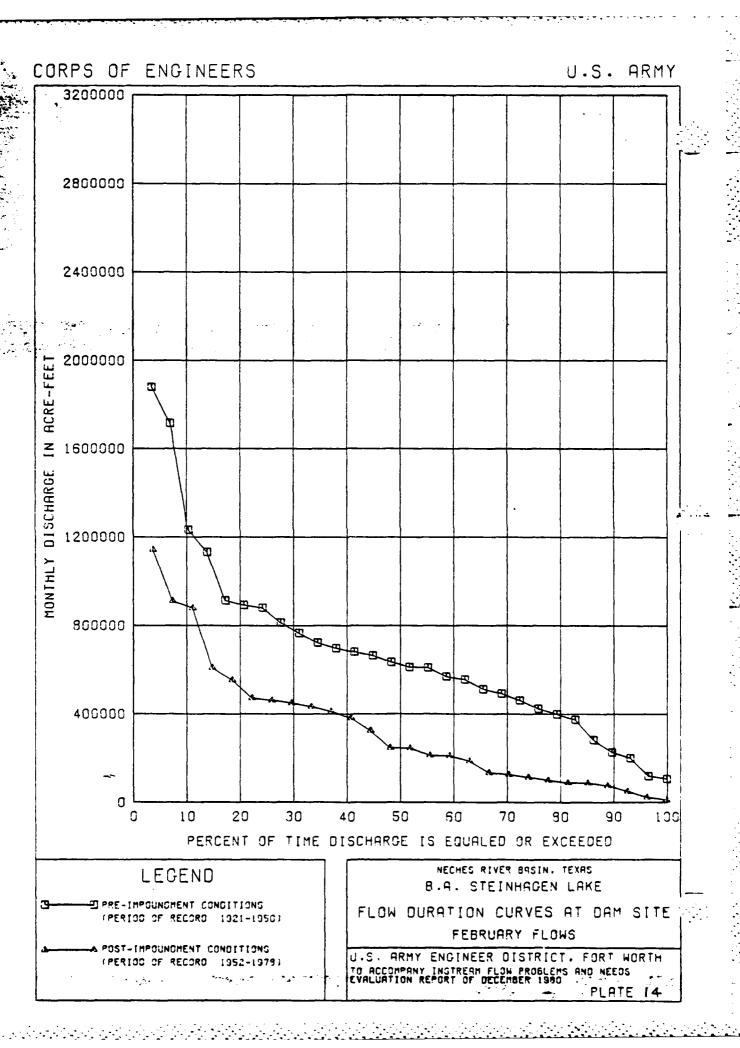
PRE-IMPOUNDMENT CONDITIONS (PERIOD OF RECORD 1921-1950)

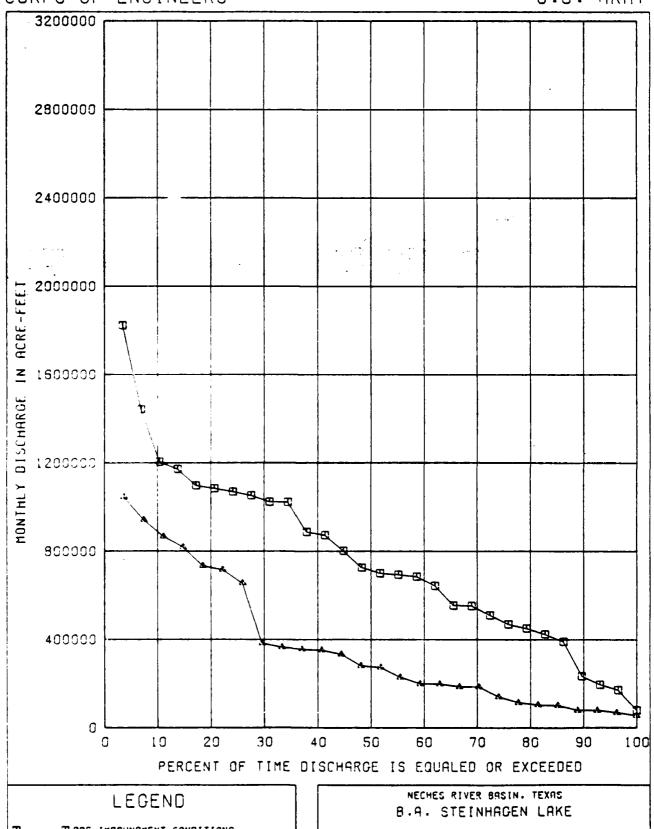
POST-IMPOUNDMENT CONDITIONS (PERIOD OF RECORD 1952-1979)

B.A. STEINHAGEN LAKE

FLOW DURATION CURVES AT DAM SITE
JANUARY FLOWS

U.S. ARMY ENGINEER DISTRICT. FORT WORTH
TO ACCOMPANY INSTREAM FLOW PROBLEMS AND NEEDS
EVALUATION REPORT OF DECEMBER 1990.
PLATE 13





POST-IMPOUNDMENT CONDITIONS

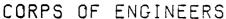
(PERIOD OF RECORD 1921-1950)

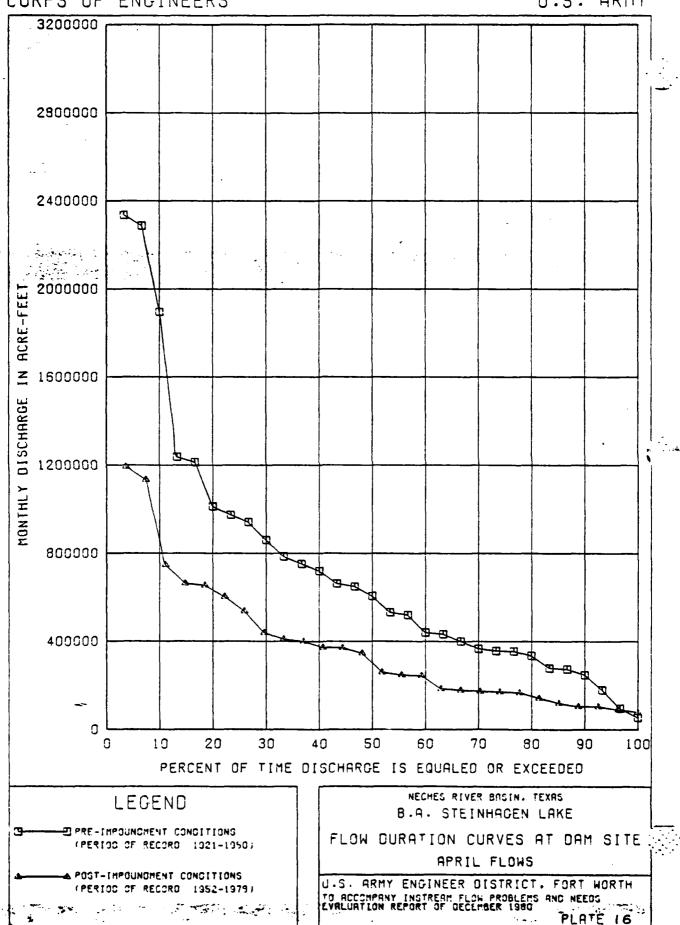
POST-IMPOUNDMENT CONDITIONS

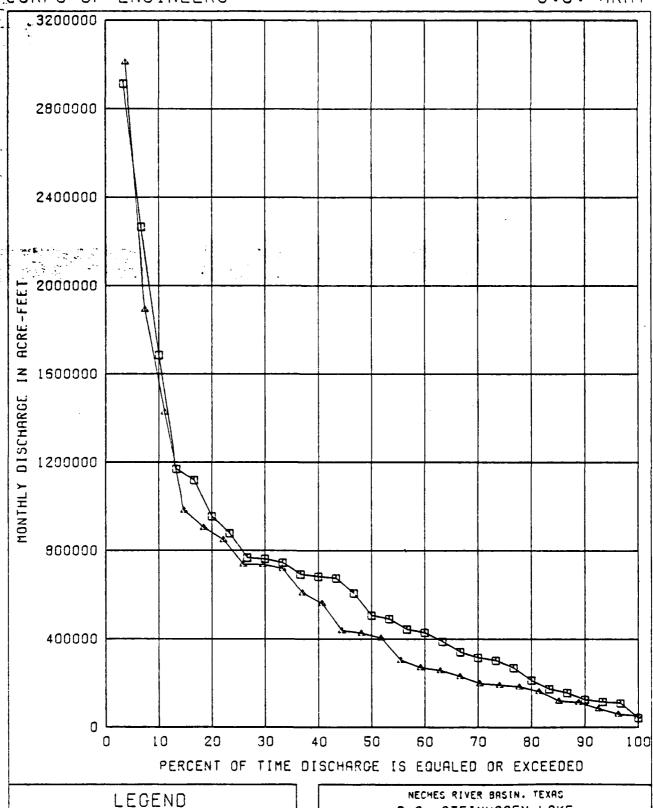
(PERIOD OF RECORD 1952-1979)

B.A. STEINHAGEN LAKE
FLOW DURATION CURVES AT DAM SITE
MARCH FLOWS

U.S. ARMY ENGINEER DISTRICT. FORT WORTH TO ACCOMPANY INSTREAM FLOW PROBLEMS AND NEEDS EVALUATION REPORT OF DECEMBER 1980 - PLATE 15







- PRE-IMPOUNCHENT CONGITIONS (PERIOD OF RECORD | 1921-1950)

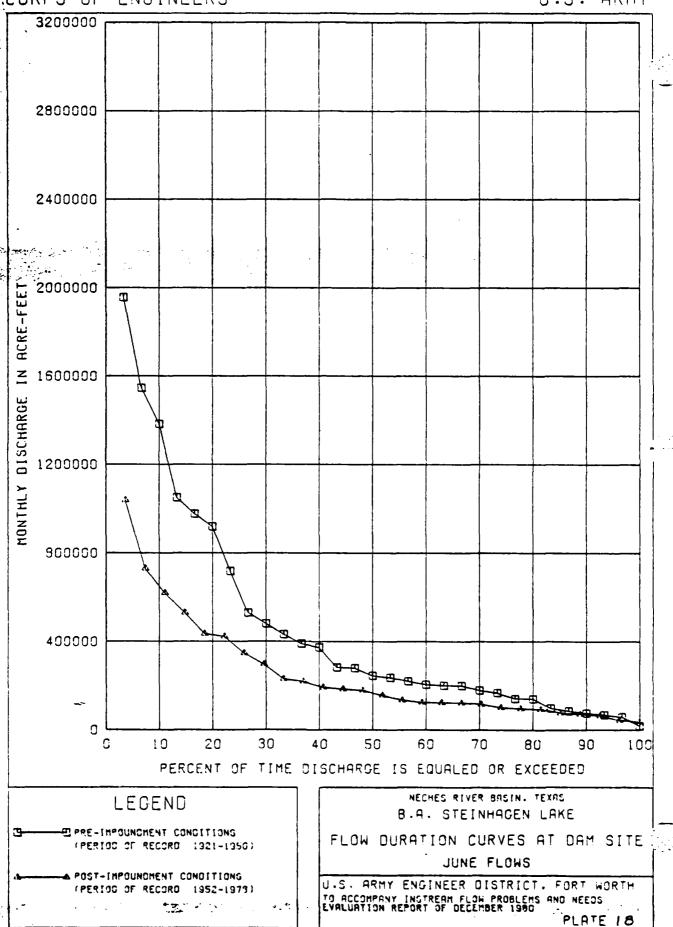
POST-IMPOUNDMENT CONDITIONS (PERIOD OF RECORD 1952-1979) B.A. STEINHAGEN LAKE

FLOW DURATION CURVES AT DAM SITE

MAY FLOWS

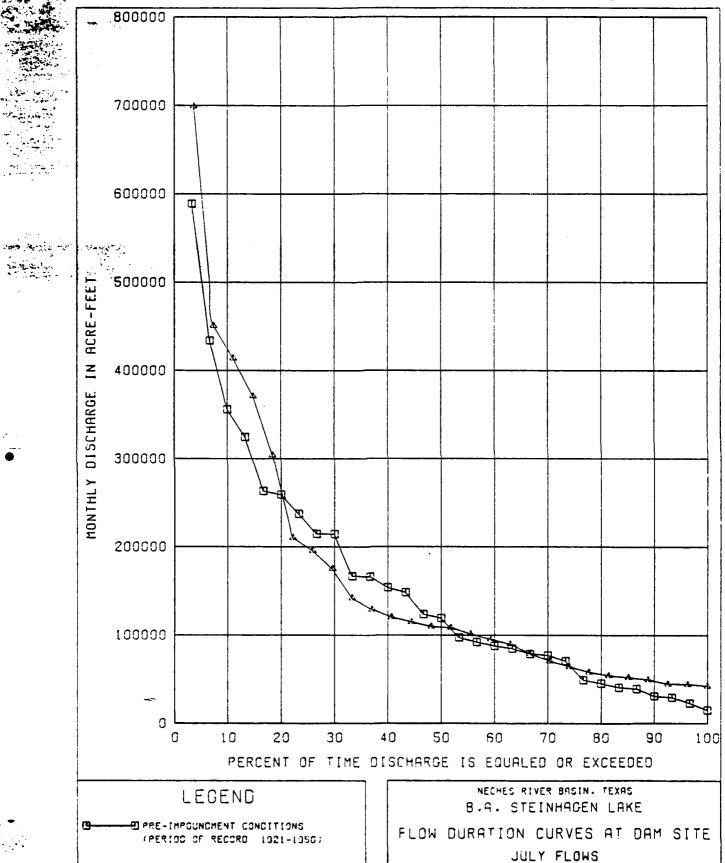
U.S. ARMY ENGINEER DISTRICT. FORT WORTH TO ACCOMPANY INSTREAM FLOW PROBLEMS AND NEEDS EVALUATION REPORT OF DECEMBER 1980 PLATE 17





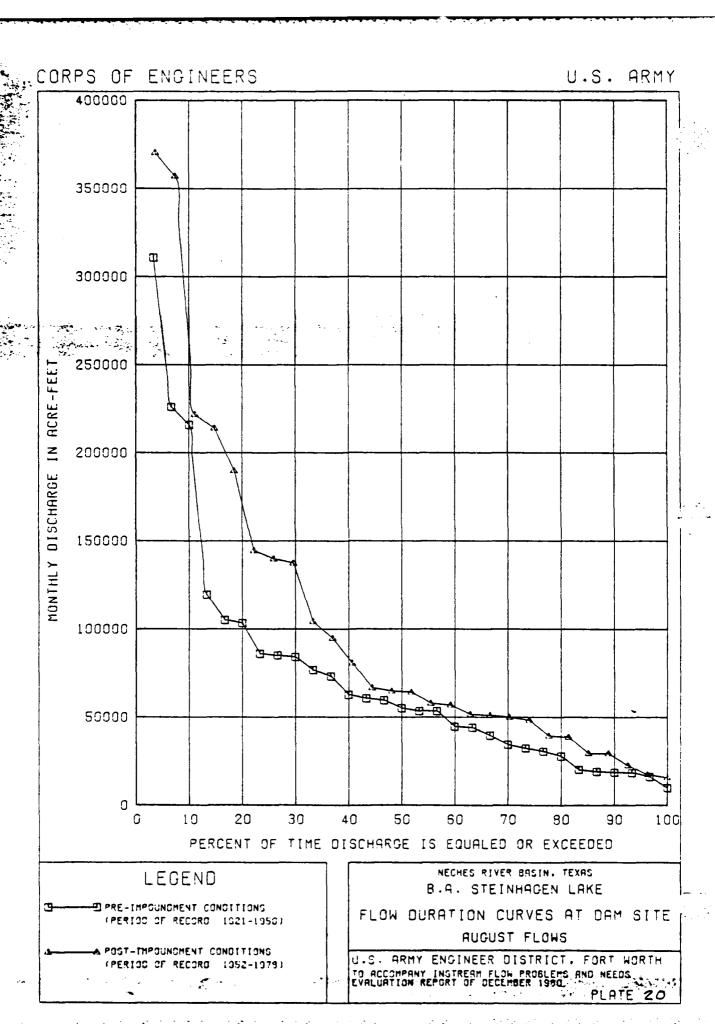
A POST-IMPOUNDMENT CONCITIONS

(PERIOD OF RECORD 1952-1979)



U.S. ARMY ENGINEER DISTRICT. FORT WORTH

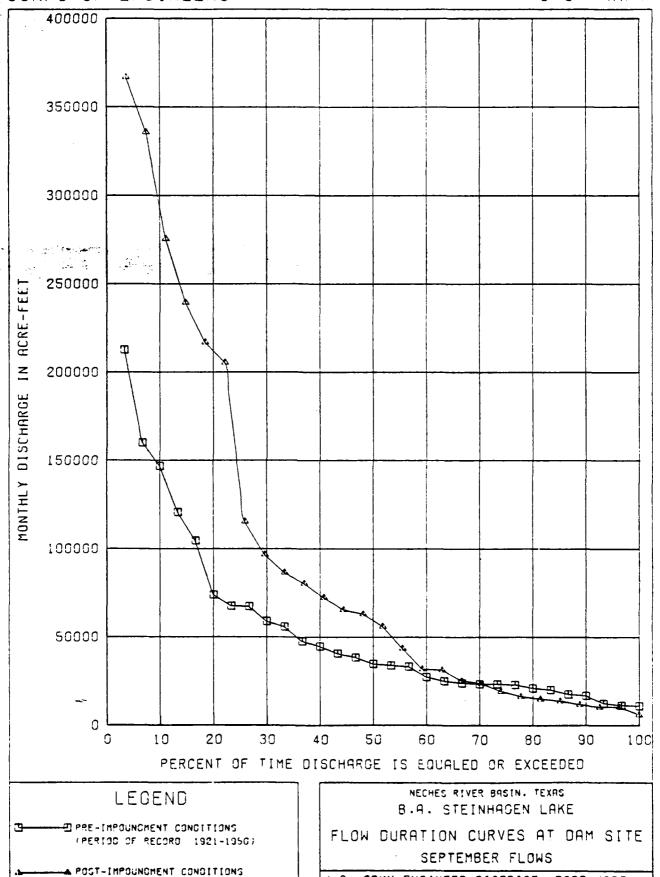
TO ACCOMPANY INSTREAM FLOW PROBLEMS AND NEEDS EVALUATION REPORT OF DECEMBER 1980 AND NEEDS





(PERIOD OF RECORD 1952-1979)

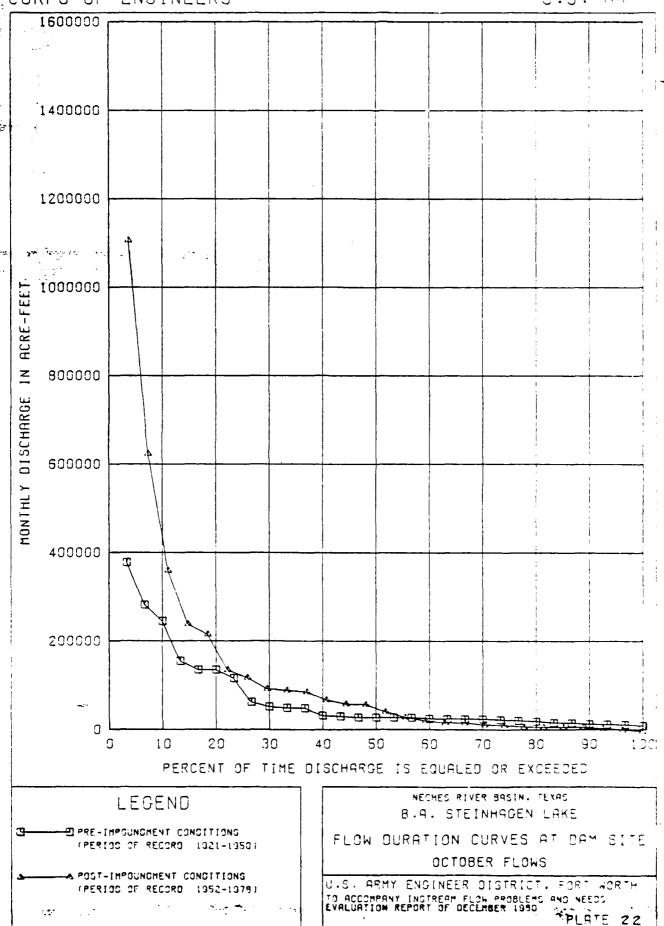
U.S. ARMY

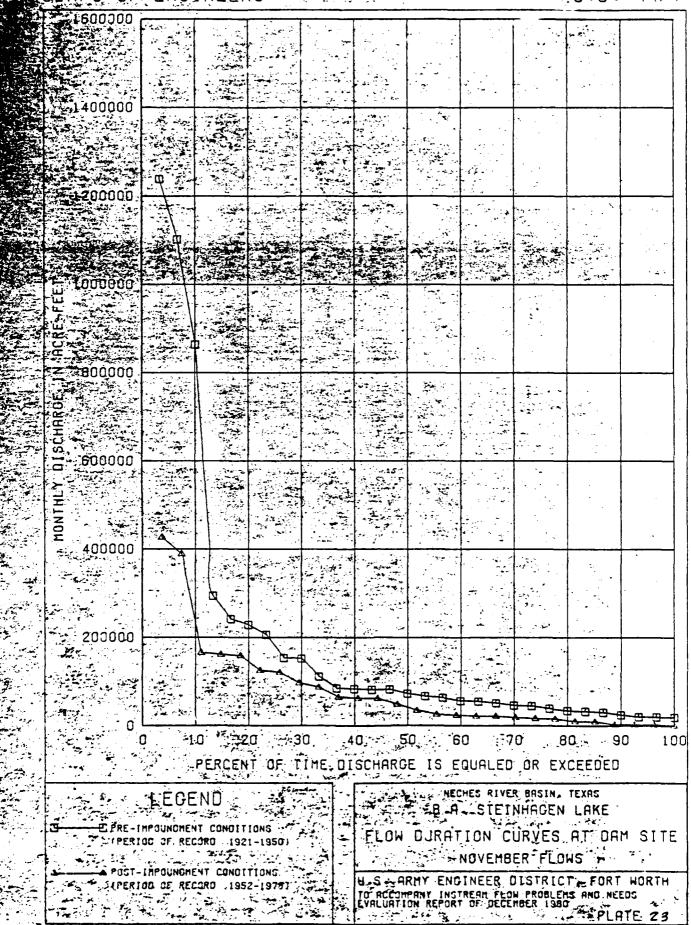


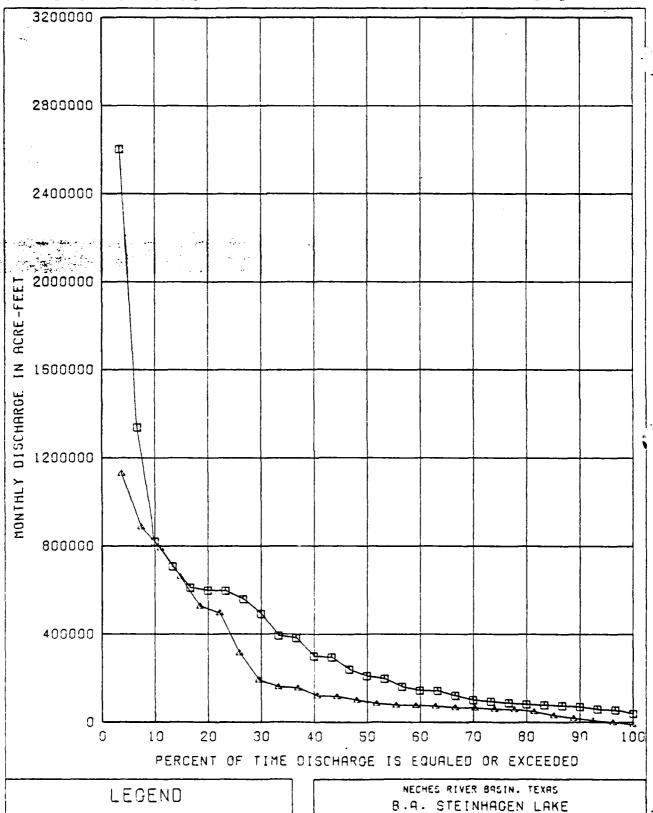
U.S. ARMY ENGINEER DISTRICT. FORT WORTH

PLATE 21

TO ACCOMPANY INSTREAM FLOW PROBLEMS AND NEEDS EVALUATION REPORT OF DECEMBER 1980





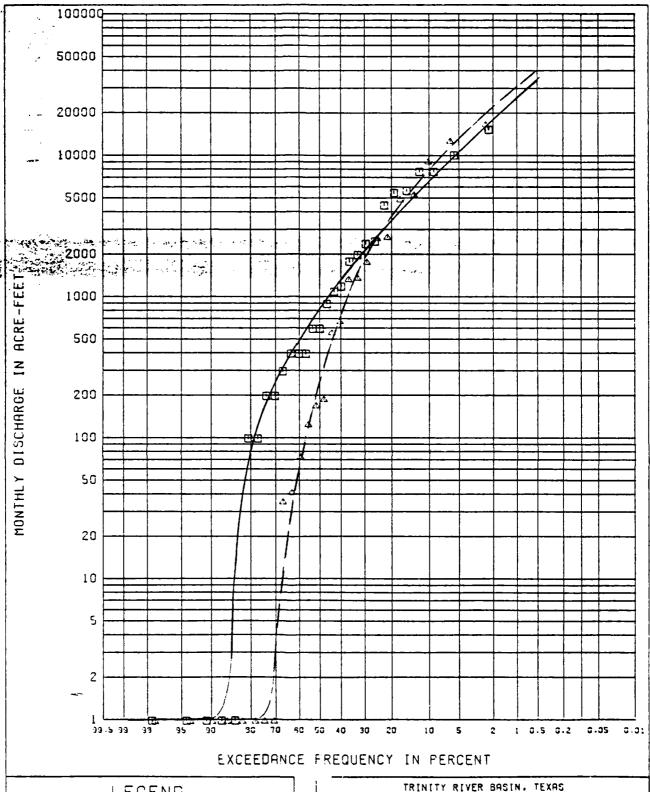


#3 PRE-IMPOUNDMENT CONDITIONS (PERIOD OF RECORD 1921-1950) & POST-IMPOUNDMENT CONDITIONS

(PERIOD OF RECORD 1952-1979)

FLOW DURATION CURVES AT DAM SITE DECEMBER FLOWS

ENGINEER DISTRICT. FORT WORTH TO ACCOMPANY INSTREAM FLOW PROBLEMS AND NEEDS EVALUATION REPORT OF DECEMBER 1980 PLATE 24

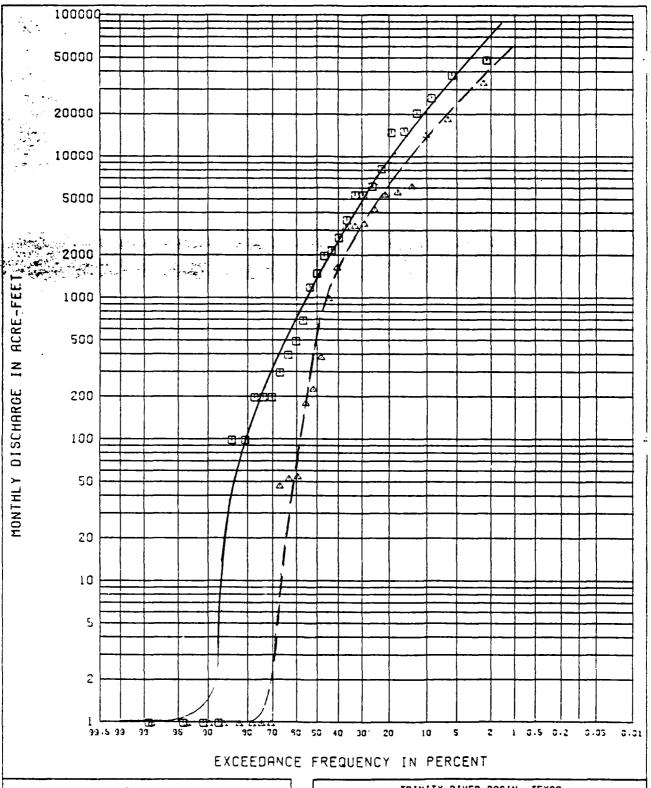


E PRE-IMPOUNDMENT CONDITIONS /PERIOD OF RECORD [924-1952]

A POST-IMPOUNCHENT CONCITIONS (PERIOD OF RECORD 1953-1979)

BENBROOK LAKE DISCHARGE-FREQUENCY RELATIONS AT DAM SITE JANUARY FLOWS

U.S. ARMY ENGINEER DISTRICT. FORT WORTH TO ACCOMPANY INSTREM FLOW PROBLEMS AND MEEDS EVALUATION REPORT OF DECEMBER 1980 PLATE I



PRE-IMPOUNDMENT CONDITIONS
(PERIOD OF RECORD 1924-1952)

- - SPOST-IMPOUNDMENT CONDITIONS
(PERIOD OF RECORD 1953-1979)

TRINITY RIVER BASIN. TEXAS

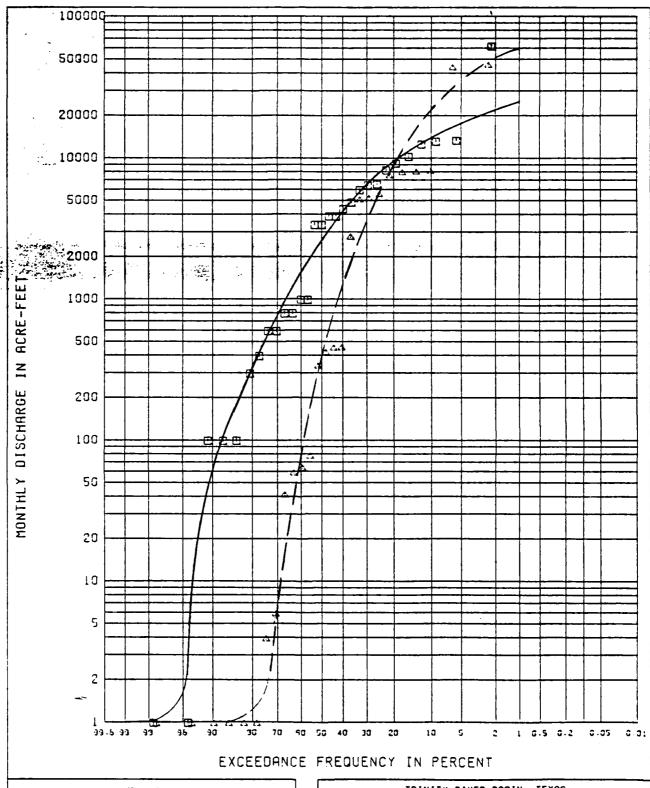
BENBROOK LAKE

DISCHARGE-FREQUENCY RELATIONS

AT DAM SITE

FEBRUARY FLOWS

U.S. ARMY ENGINEER DISTRICT. FORT WORTH
TO ACCOMPANY INSTREAM FLOW PROBLEMS AND NEEDS
EVALUATION REPORT OF DECEMBER 1980
PLATE 2



PRE-IMPOUNDMENT CONDITIONS

(PERIOD OF RECORD 1924-1952)

A= — — POST-IMPOUNDMENT CONDITIONS (PERIOD OF RECORD 1953-1973) TRINITY RIVER BASIN, TEXAS

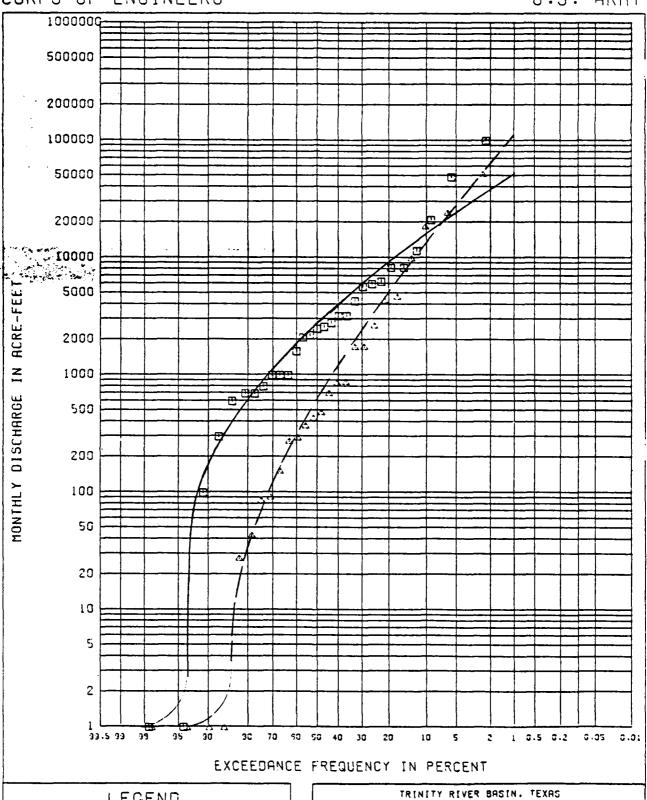
BENBROOK LAKE

DISCHARGE-FREQUENCY RELATIONS

AT DAM SITE

MARCH FLOWS

U.S. ARMY ENGINEER DISTRICT. FORT WORTH TO ACCOMPANY INSTREAM FLOW PROBLEMS AND MEEDS EVALUATION REPORT OF DECEMBER 1990 FOR PLATE 3



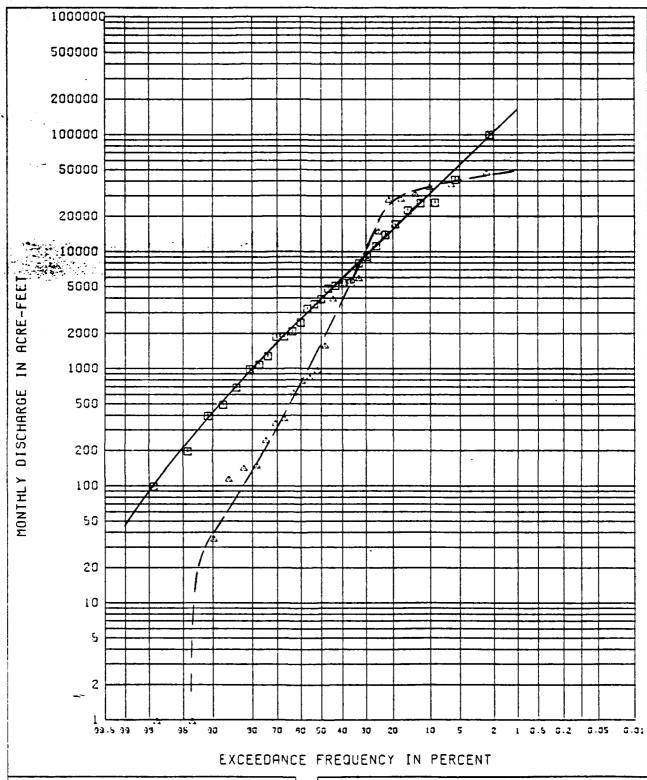
- PRE-IMPOUNDMENT CONCITIONS (PERIOD OF RECORD 1924-1952)

-5 POST-IMPOUNCHENT CONCITIONS (PERIOD OF RECORD 1953-1979)

BENBROOK LAKE DISCHARGE-FREQUENCY RELATIONS AT DAM SITE APRIL FLOWS

U.S. ARMY ENGINEER DISTRICT. FORT WORTH TO ACCOMPANY INSTREAM FLOW PROBLEMS AND NEEDS PLATE 4

A 27.



LEGEND

PRE-IMPOUNDMENT CONDITIONS
(PERIOD OF RECORD 1924-1952)

A — — POST-IMPOUNDMENT CONDITIONS
(PERIOD OF RECORD 1953-1979)

TRINITY RIVER BASIN, TEXAS

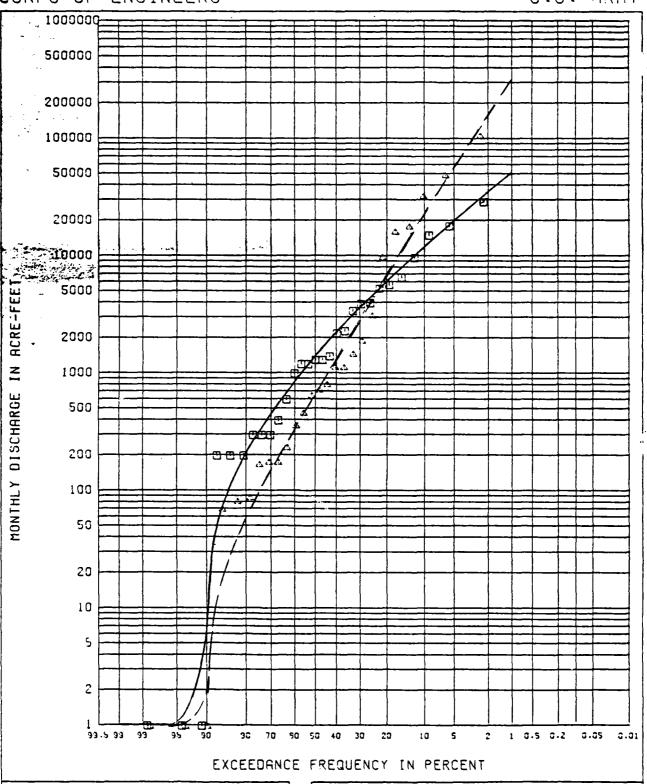
BENBROOK LAKE

DISCHARGE-FREQUENCY RELATIONS

AT DAM SITE

MAY FLOWS

U.S. ARMY ENGINEER DISTRICT. FORT WORTH
TO ACCOMPANY INSTREAM FLOW PROBLEMS AND NEEDS
EVALUATION REPORT OF DECEMBER 1980
PLATE 5



PRE-IMPOUNDMENT CONDITIONS
(PERIOD OF RECORD 1924-1952)

POST-IMPOUNDMENT CONDITIONS
(PERIOD OF RECORD 1953-1979)

TRINITY RIVER BASIN. TEXAS

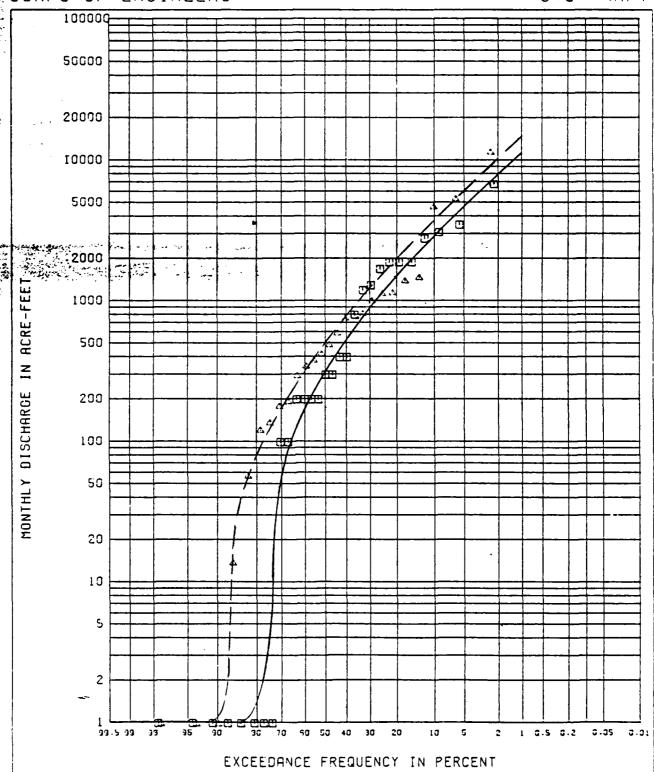
BENBROOK LAKE

DISCHARGE-FREQUENCY RELATIONS

AT DAM SITE

JUNE FLOWS

U.S. ARMY ENGINEER DISTRICT. FORT WORTH
TO ACCOMPANY INSTREAM FLOW PROBLEMS AND NEEDS
EVALUATION REPORT OF DECEMBER 1990
PLATE 6



PRE-IMPOUNDMENT CONDITIONS
(PERIOD OF RECORD 1924-1952)

- - POST-IMPOUNDMENT CONDITIONS
(PERIOD OF RECORD 1953-1979)

TRINITY RIVER BASIN, TEXAS

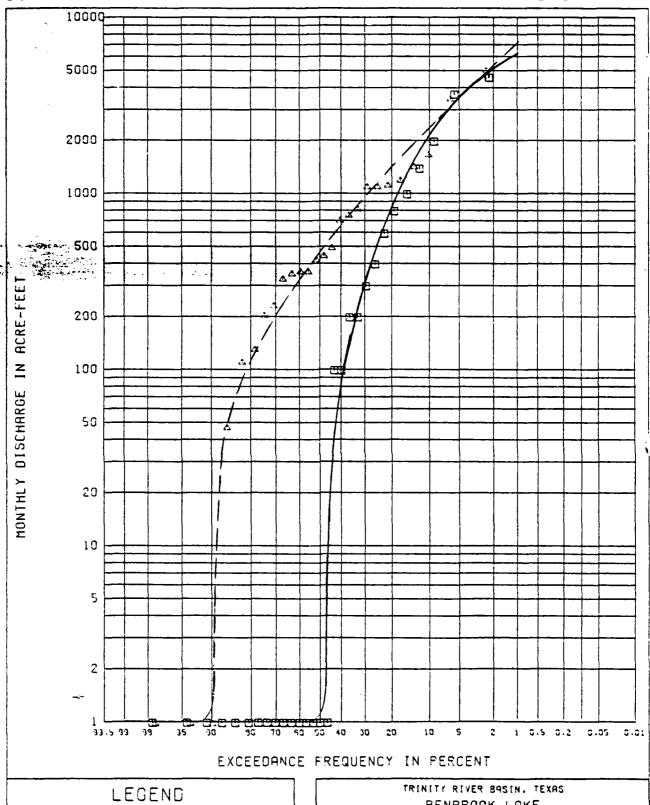
BENBROOK LAKE

DISCHARGE-FREQUENCY RELATIONS

AT DAM SITE

JULY FLOWS

U.S. ARMY ENGINEER DISTRICT. FORT HORTH TO ACCOMPANY INSTREAM FLOW PROBLEMS AND NEEDS EVALUATION REPORT OF DECEMBER 1980 PLATE 7



PRE-IMPOUNDMENT CONDITIONS

(PERIOD OF RECORD 1924-1952)

- - POST-IMPOUNCHENT CONDITIONS (PERIOD OF RECORD 1953-1979)

TRINITY RIVER BASIN. TEXAS

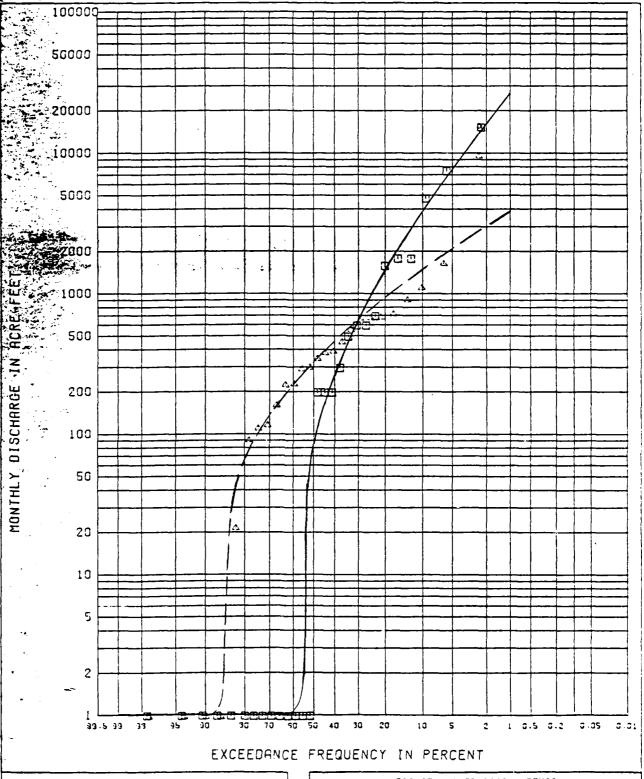
BENBROOK LAKE

DISCHARGE-FREQUENCY RELATIONS

AT DAM SITE

AUGUST FLOWS

U.S. ARMY ENGINEER DISTRICT. FORT WORTH
TO ACCOMPANY INSTREAM FLOW PROBLEMS AND NEEDS
EVALUATION REPORT OF DECEMBER 1980
PLATE 8



-EPRE-IMPOUNDMENT CONDITIONS (PERIOD OF RECORD 1924-1952)

POST-IMPOUNDMENT CONCITIONS
(PERIOD OF RECORD 1953-1979)

TRINITY RIVER BASIN. TEXAS

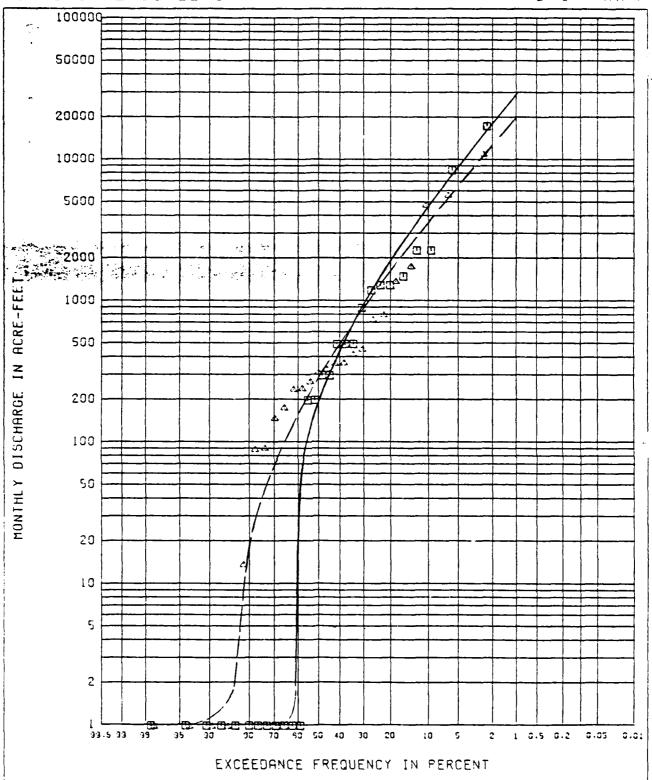
BENBROOK LAKE

DISCHARGE-FREQUENCY RELATIONS

AT DAM SITE

SEPTEMBER FLOWS

U.S. GRMY ENGINEER DISTRICT, FORT WORTH TO ACCOMPANY INSTREAM FLOW PROBLEMS AND NEEDS EVALUATION REPORT OF DECEMBER 1980 PLATE 9



PRE-IMPOUNDMENT CONDITIONS (PERIOD OF RECORD 1924-1952)

- - POST-IMPOUNDMENT CONDITIONS (PERIOD OF RECORD 1953-1979)

TRINITY RIVER BASIN. TEXAS

BENBROOK LAKE

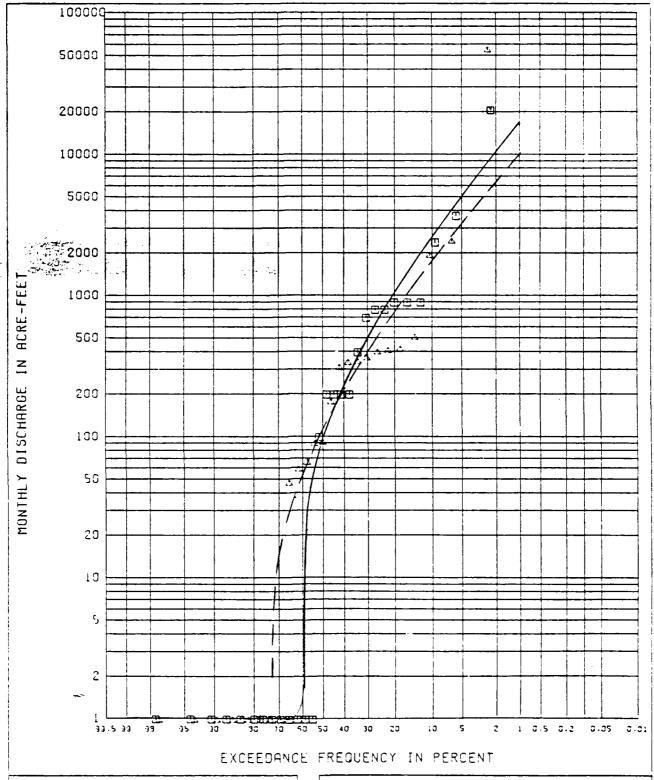
DISCHARGE-FREQUENCY RELATIONS

AT DAM SITE

OCTOBER FLOWS

U.S. ARMY ENGINEER DISTRICT. FORT WORTH TO ACCOMPANY INSTREAM FLOW PROBLEMS AND NEEDS EVALUATION REPORT OF DECEMBER 1990.

PLATE 10



PRE-IMPOUNDMENT CONDITIONS (PERIOD OF RECORD 1924-1952)

- - - POST-IMPOUNDMENT CONDITIONS
(PERIOD OF RECORD 1953-1379)

TRINITY RIVER BASIN, TEXAS

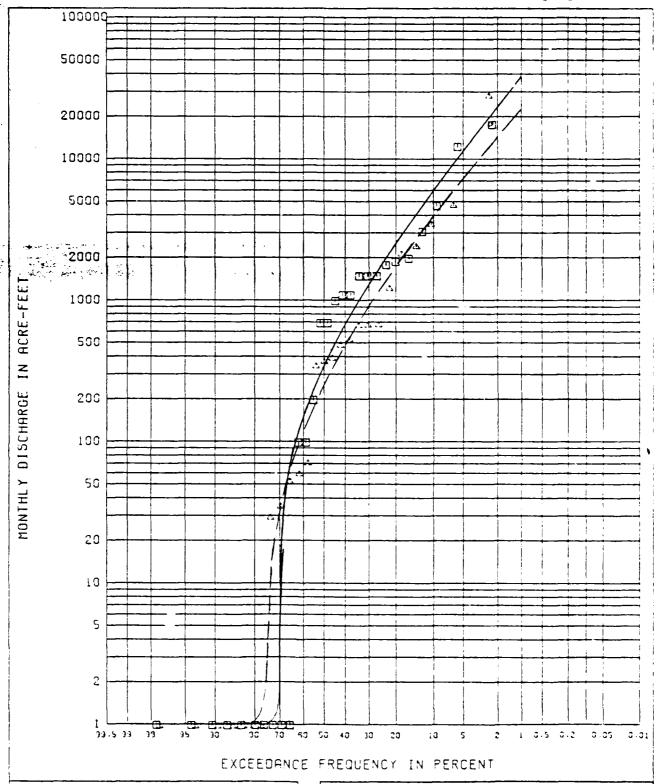
BENBROOK LAKE

DISCHARGE-FREQUENCY RELATIONS

AT DAM SITE

NOVEMBER FLOWS

U.S. ARMY ENGINEER DISTRICT, FORT WORTH
TO ACCOMPANY INSTREM FLOW PROBLEMS AND NEEDS
EVALUATION REPORT OF DECEMBER 1990
PLATE 11



PRE-IMPOUNDMENT CONDITIONS

(PERIOD OF RECORD 1924-1952)

 TRINITY RIVER BASIN, TEXAS

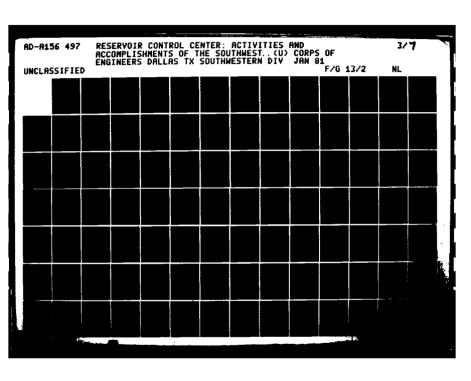
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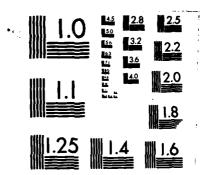
DISCHARGE-FREQUENCY RELATIONS

AT DAM SITE

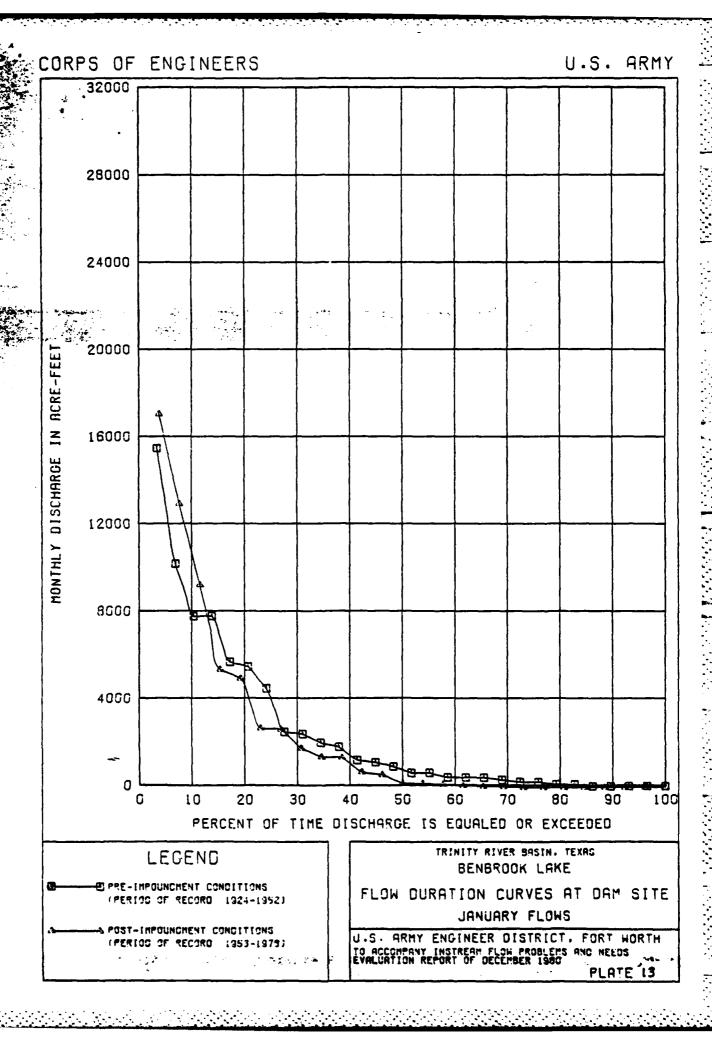
DECEMBER FLOWS

U.S. ARMY ENGINEER DISTRICT. FORT WORTH
TO ACCOMPANY INSTREAM FLOW PROBLEMS AND NEEDS
EVALUATION REPORT OF DECEMBER 1350
PLATE 12





MICROCOPY RESOLUTION TEST CHART NATIONAL BUREAU OF STANDARDS-1963-A





U.S. ARMY

PLATE 14

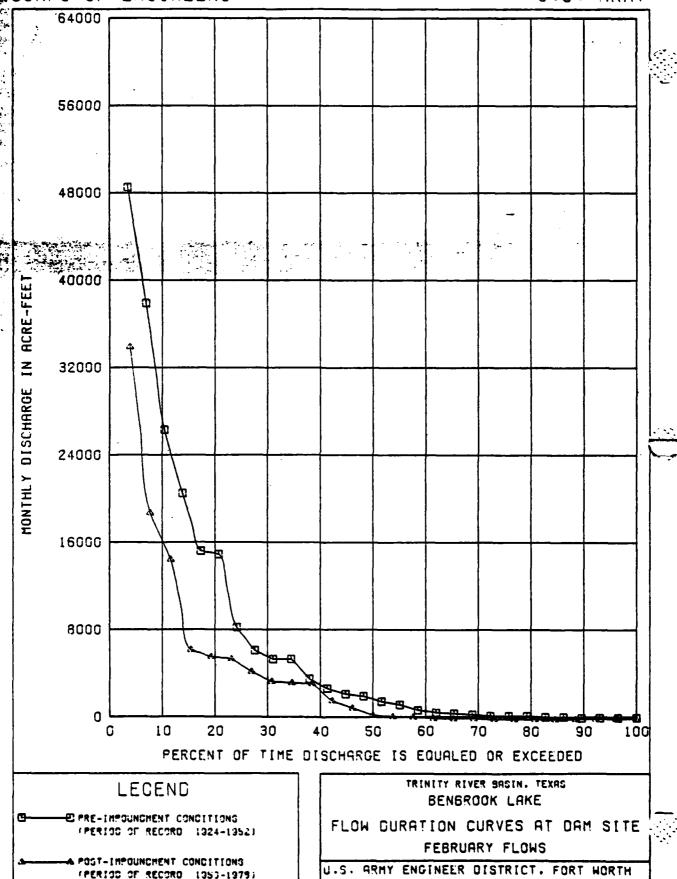


PLATE 15

FLOW DURATION CURVES AT DAM SITE

APRIL FLOWS

PLATE 16

U.S. ARMY ENGINEER DISTRICT. FORT WORTH

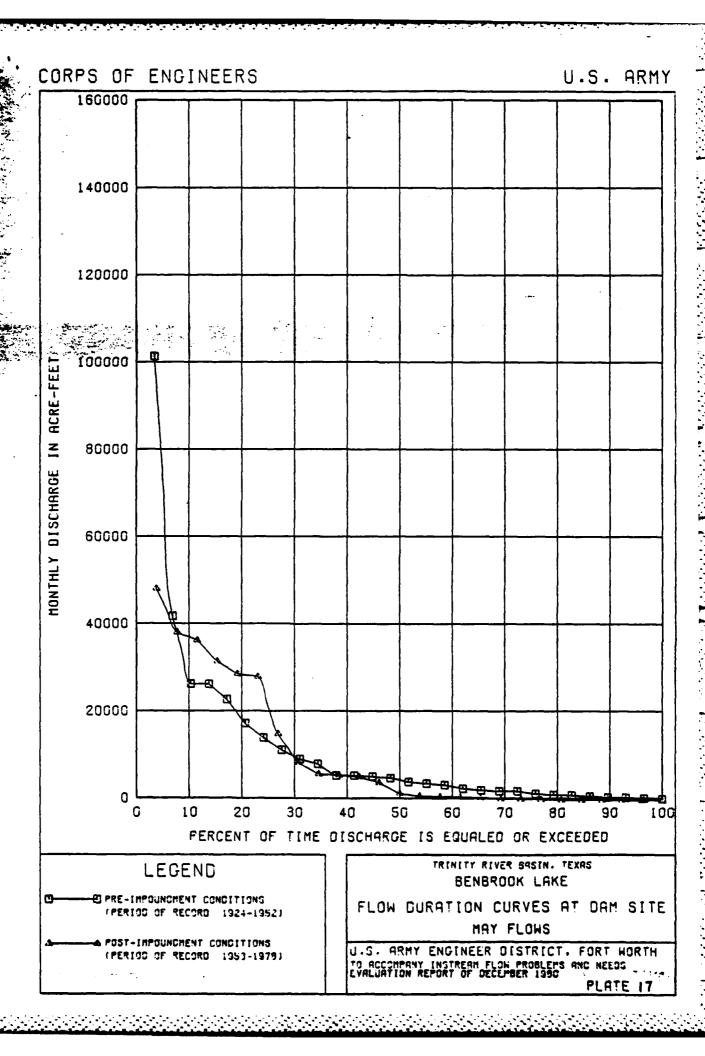
TO RECEMPANY INSTREAM FLOW PROBLEMS AND NEEDS LYALUATION REPORT OF DECEMBER 1990

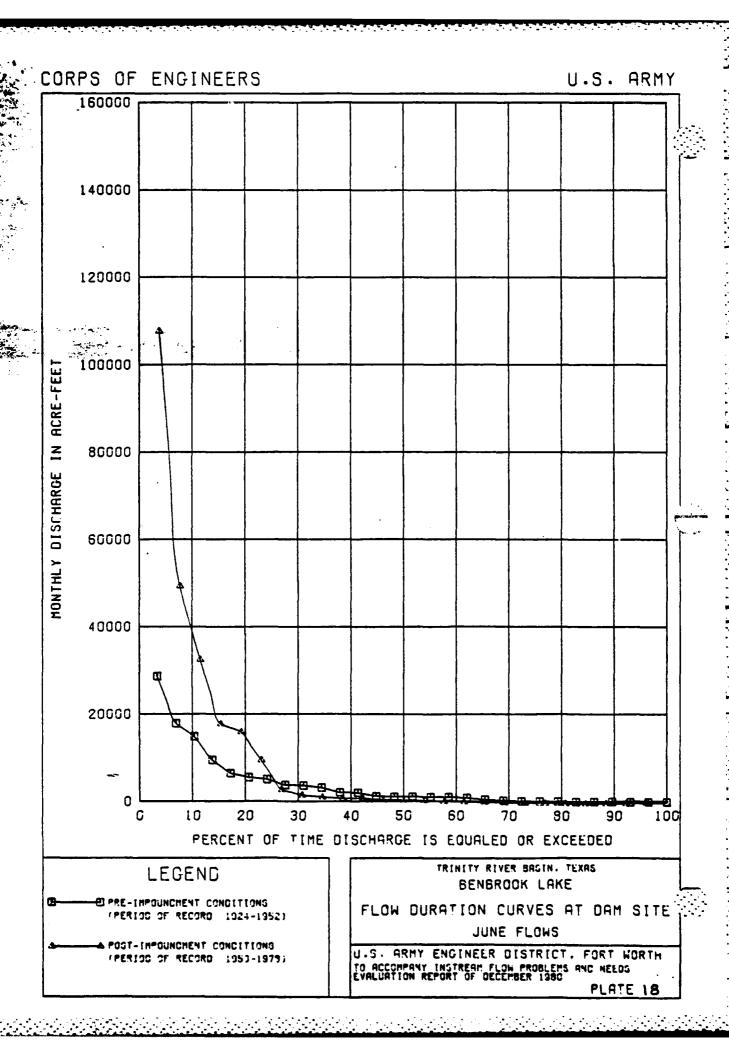
@ PRE-IMPOUNDMENT CONCITIONS

A POST-IMPOUNDMENT CONCITIONS

(PERIOD OF RECORD 1024-1052)

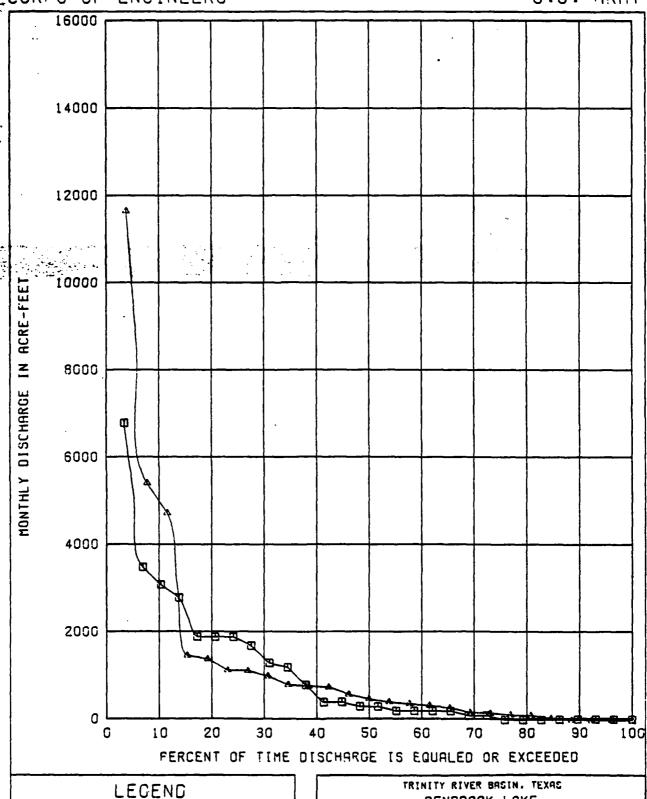
(PERIOD OF RECORD 1950-1979)







U.S. ARMY

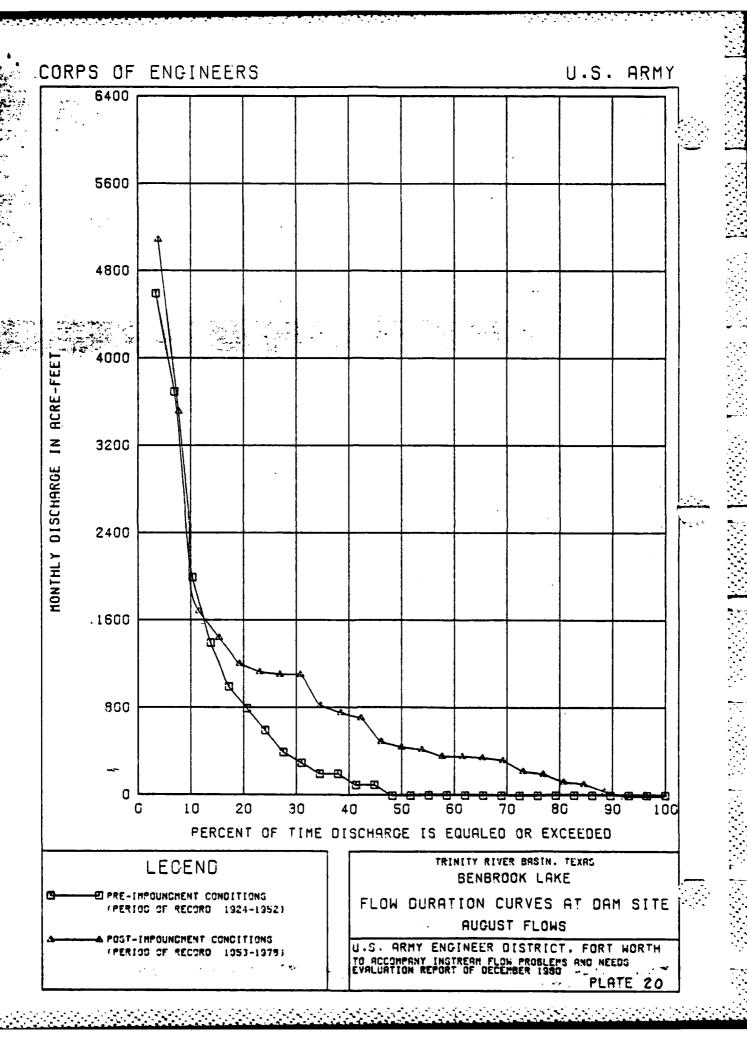


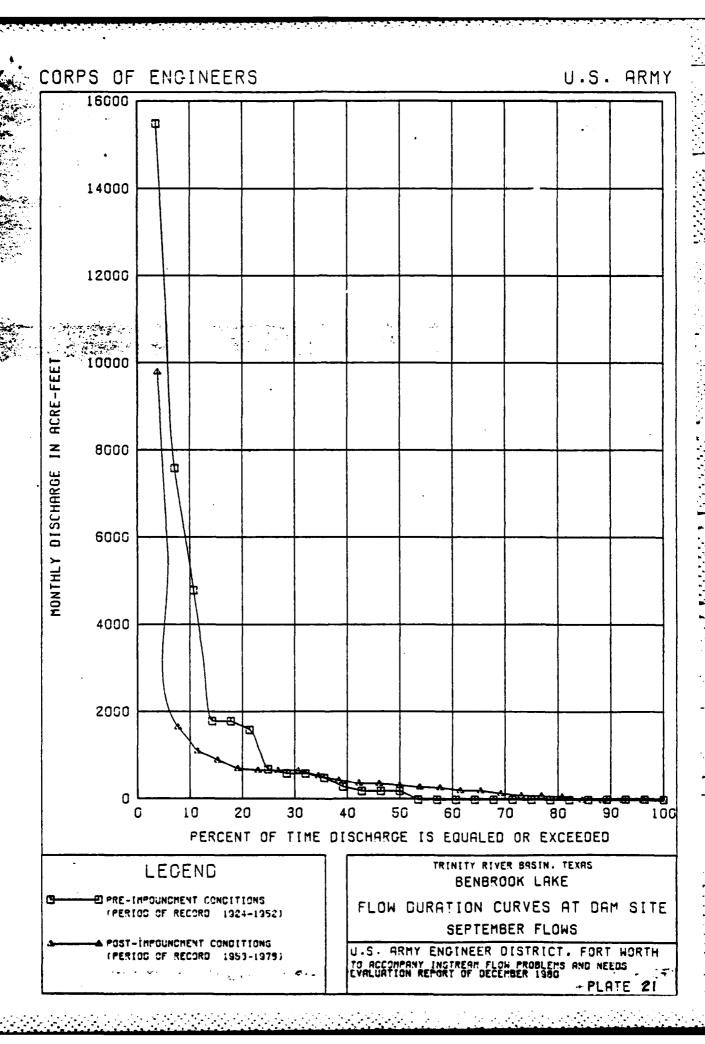
E PRE-IMPOUNGMENT CONCITIONS (PERIOD OF RECORD 1924-1952)

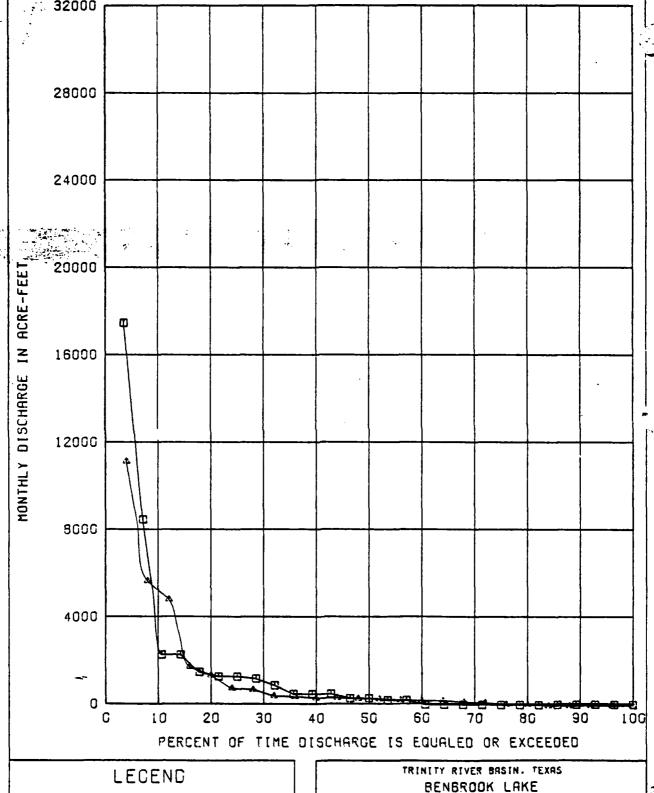
POST-IMPOUNCHENT CONCITIONS (PERIOD OF RECORD 1953-1979) BENBROOK LAKE

FLOW DURATION CURVES AT DAM SITE JULY FLOWS

U.S. ARMY ENGINEER DISTRICT. FORT HORTH PLATE 19





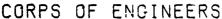


E PRE-IMPOUNDMENT CONCITIONS (PERIOD OF RECORD 1924-1952).

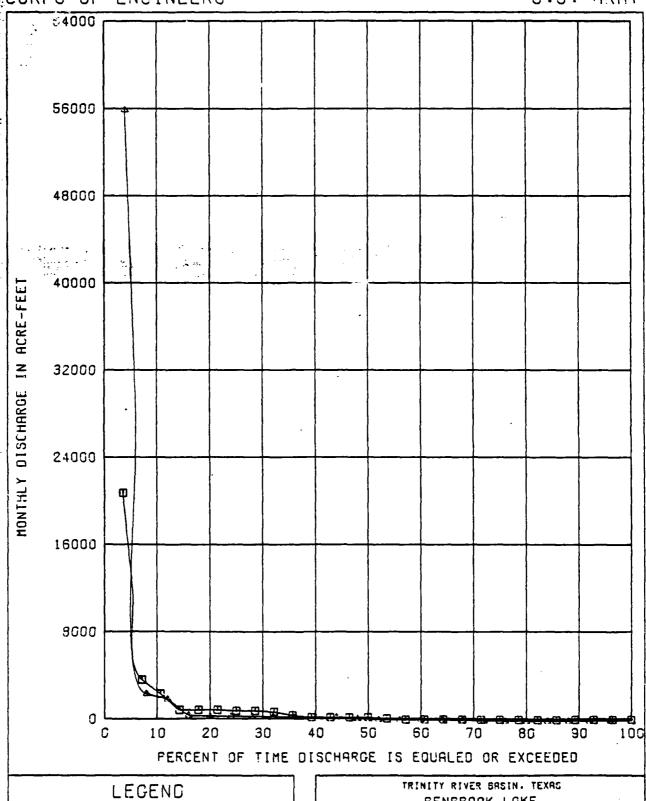
> POST-IMPOUNCHENT CONCITIONS (PERIOD OF RECORD 1953-1979)

FLOW DURATION CURVES AT DAM SITE OCTOBER FLOWS

ARMY ENGINEER DISTRICT. FORT WORTH PLATE 22



U.S. ARMY

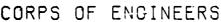


E PRE-IMPOUNCHENT CONDITIONS (PERIOD OF RECORD 1924-1952)

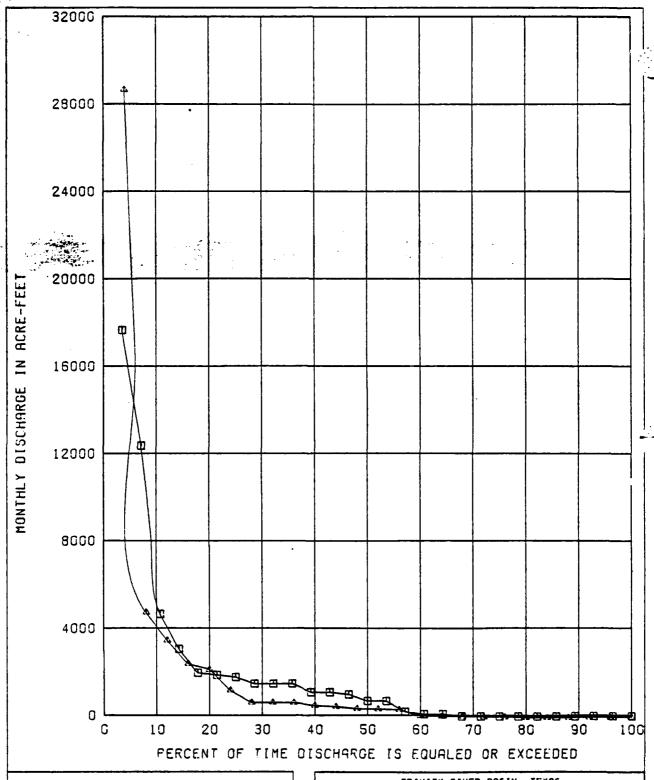
A POST-IMPOUNCHENT CONDITIONS (PERIOD OF RECORD 1953-1979) BENBROOK LAKE

FLOW DURATION CURVES AT DAM SITE NOVEMBER FLOWS

U.S. ARMY ENGINEER DISTRICT, FORT WORTH TO ACCOMPANY INSTREAM FLOW PROBLEMS AND NEEDS EVALUATION REPORT OF DECEMBER 1980 PLATE 23



U.S. ARMY



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PRE-IMPOUNDMENT CONDITIONS

(PERIOD OF RECORD 1924-1952)

POST-IMPOUNDMENT CONDITIONS

(PERIOD OF RECORD 1950-1979)

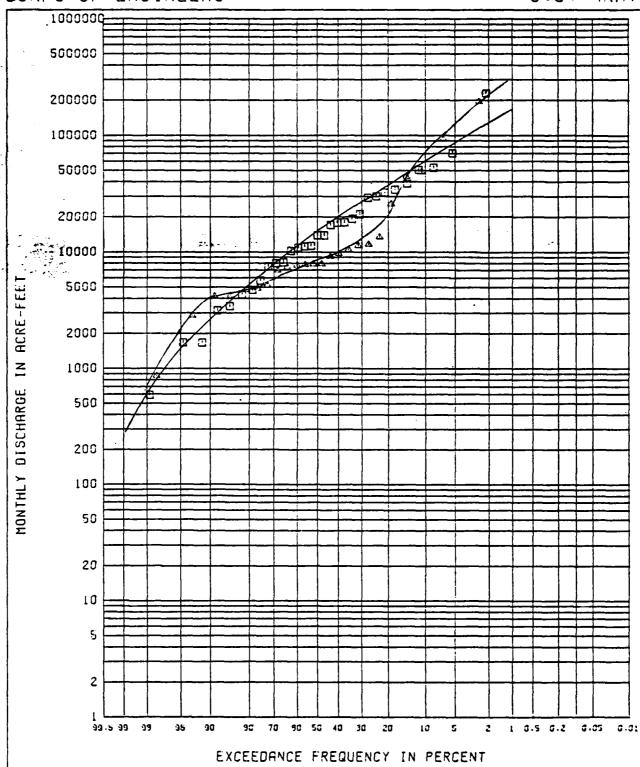
TRINITY RIVER BASIN. TEXAS BENGROOK LAKE

FLOW DURATION CURVES AT DAM SITE :

DECEMBER FLOWS

U.S. ARMY ENGINEER DISTRICT, FORT WORTH TO ACCOMPANY INSTREAM FLOW PROBLEMS AND NEEDS EVALUATION REPORT OF DECEMBER 1980

PLATE 24



PRE-IMPOUNDMENT CONDITIONS
(PERIOD OF RECORD 1924-1954)

- - - POST-IMPOUNDMENT CONDITIONS
(PERIOD OF RECORD 1955-1978)

TRINITY RIVER BASIN. TEXAS

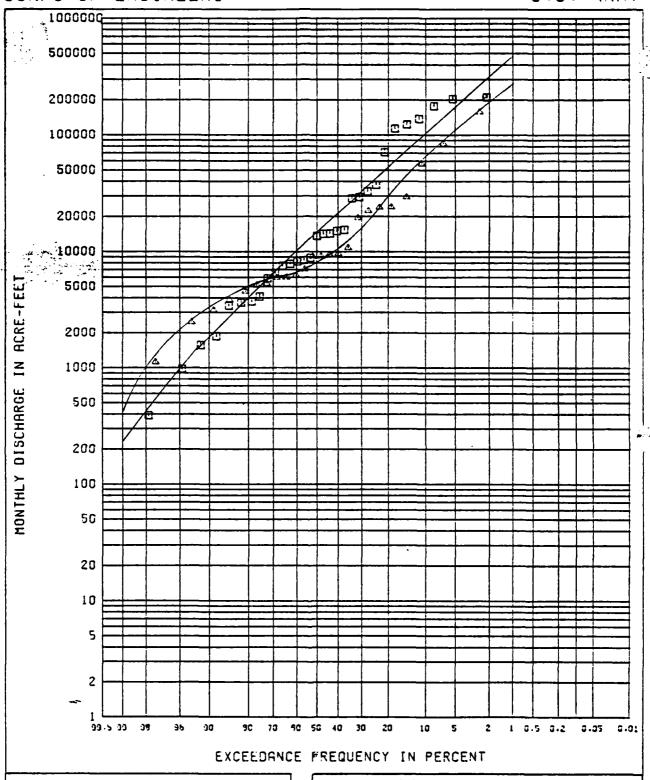
LEWISVILLE LAKE

DISCHARGE-FREQUENCY RELATIONS

AT DAM SITE

JANUARY FLOWS

U.S. ARMY ENGINEER DISTRICT. FORT WORTH
TO ACCOMPANY INSTREAM FLOW PROBLEMS AND NEEDS
EVALUATION REPORT OF DECEMBER 1983



也 PRE-IMPOUNDMENT CONCITIONS (PERIOD OF RECORD 1924-1954)

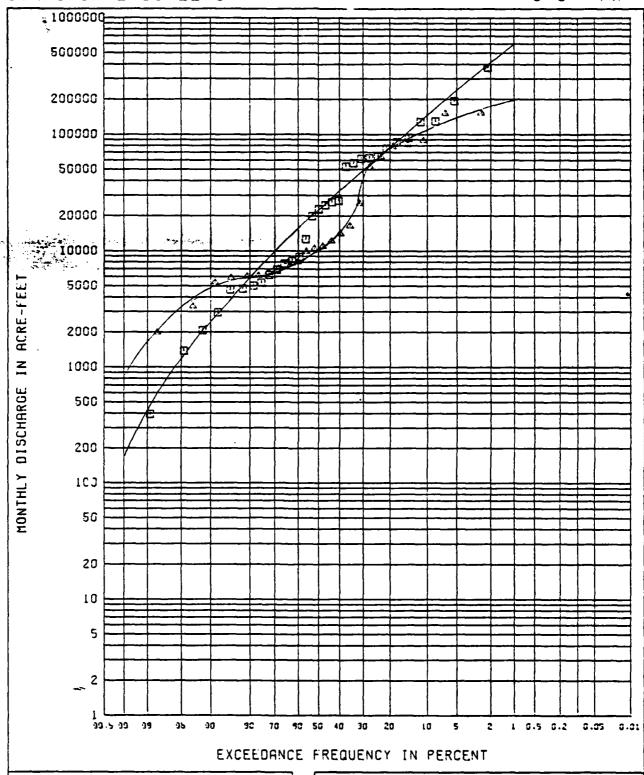
- POST-IMPOUNCHENT CONCITIONS (PERIOD OF RECORD 1955-1979)

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TRINITY RIVER BASIN. TEXAS LEWISVILLE LAKE DISCHARGE-FREQUENCY RELATIONS AT DAM SITE FEBRUARY FLOWS

U.S. ARMY ENGINEER DISTRICT. FORT WORTH TO ASSUMPTION TO THE PROBLEMS AND NEEDS EVALUATION REPORT OF DECEMBER 1995

PLATE



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9 -- -- E) PRE-IMPOUNDMENT CONDITIONS
(PERIOD OF RECORD 1924-1954)

- - POST-IMPOUNDMENT CONDITIONS
(PERIOD OF RECORD 1955-1979)

TRINITY RIVER BOSIN. TEXAS

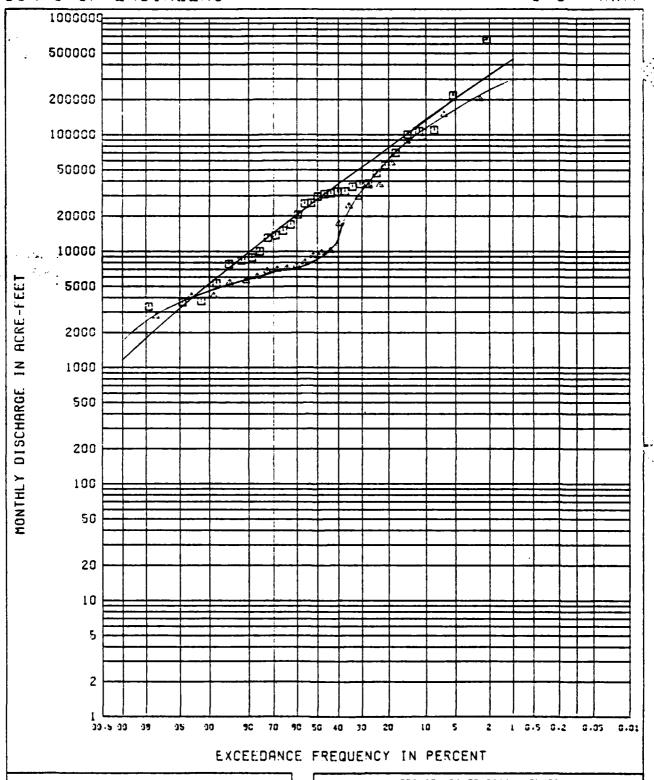
LEWISVILLE LAKE

DISCHARGE-FREQUENCY RELATIONS

AT DAM SITE

MARCH FLOWS

U.S. ARMY ENGINEER DISTRICT. FORT HORTH
TO ACCOMPANY INSTREM FLOW PROBLEMS AND NEEDS
EVALUATION REPORT OF DECEMBER 1990
PLATE 4



- - POST-IMPOUNDMENT CONDITIONS
(PERIOS OF RECORD 1995-1979)

TRINITY RIVER BASIN, TEXAS

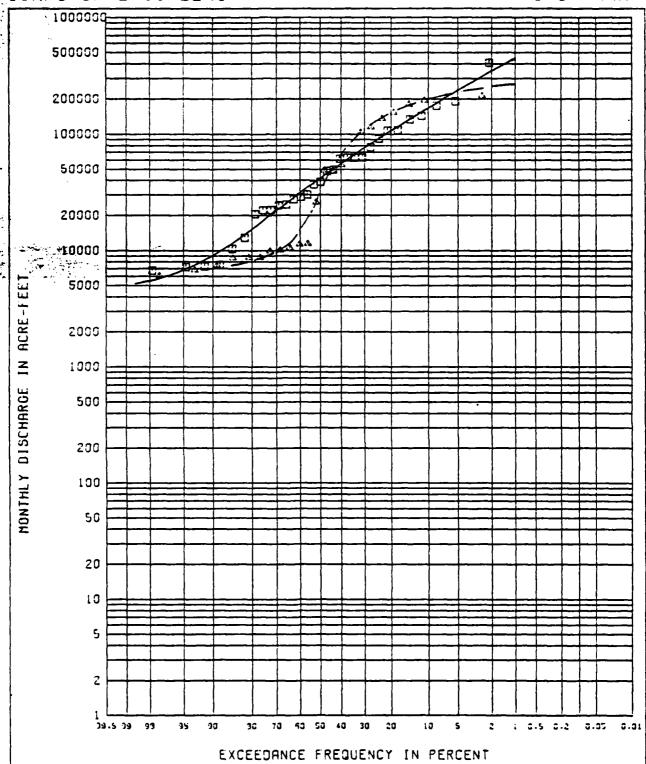
LEWISVILLE LAKE

DISCHARGE-FREQUENCY RELATIONS

AT DAM SITE

APRIL FLOWS

U.S. ARMY ENGINEER DISTRICT. FORT HORTH TO ACCOMPANY INSTREAM FLOW PROBLETS AND NEEDS EVALUATION REPORT OF DECEMBER 1990



PRE-IMPOUNDMENT CONCITIONS
(PERIOD OF RECORD 1924-1954)

- - POST-IMPOUNDMENT CONDITIONS
(PERIOD OF RECORD 1955-1979)

TRINITY RIVER SASIN. TEXAS

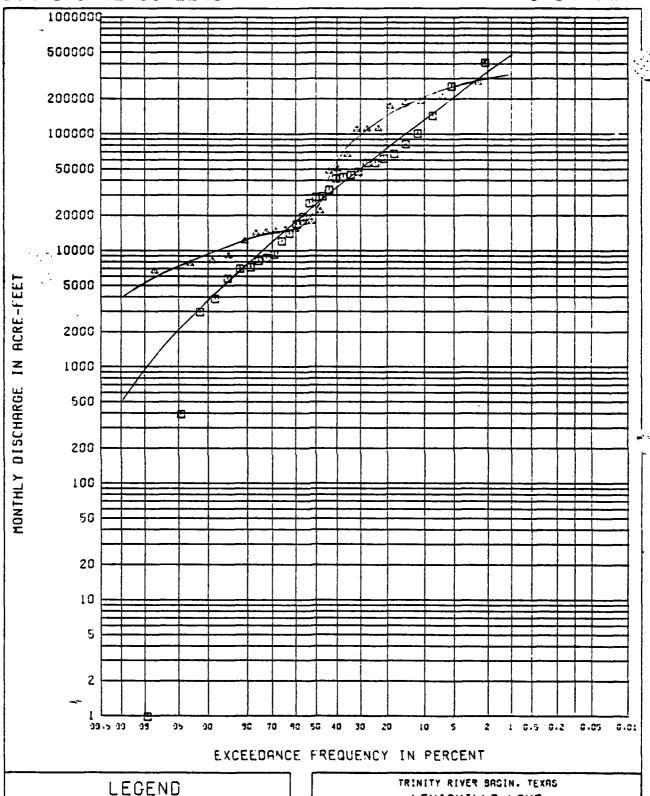
LEWISVILLE LAKE

DISCHARGE-FREQUENCY RELATIONS

AT DAM SITE

MAY FLOWS

U.S. ARMY ENGINEER DISTRICT, FORT HORTH TO ACCOMPANY INSTREAM FLOH PROBLEMS AND NEEDS EVALUATION REPORT OF DECEMBER 1990

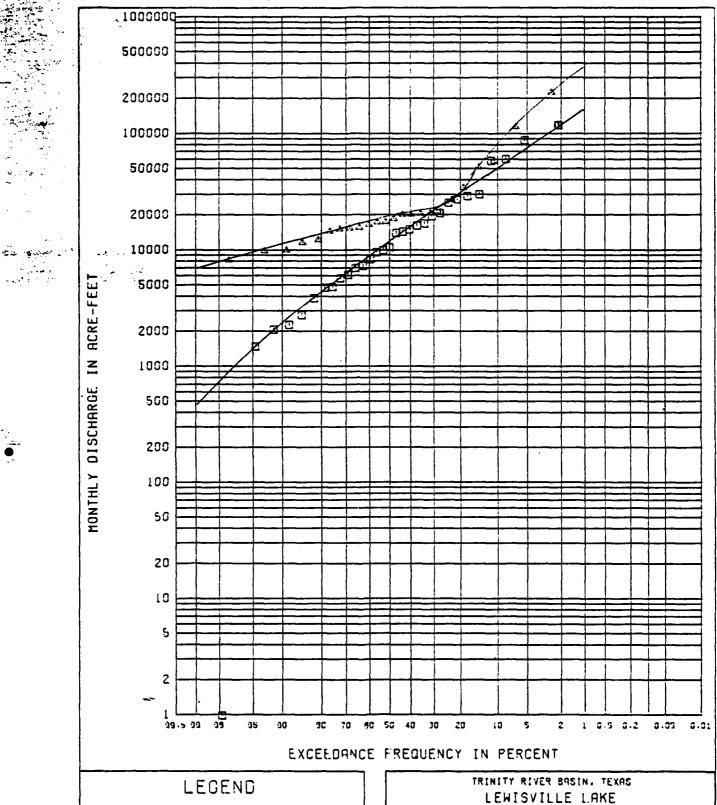


E PRE-IMPOUNDMENT CONCITIONS (PERIOD OF RECORD 1324-1954)

& POST-IMPOUNCHENT CONCITIONS (PERIOD OF RECORD (355-1379)

LEWISVILLE LAKE DISCHARGE-FREQUENCY RELATIONS AT DAM SITE JUNE FLOWS

U.S. ARMY ENGINEER DISTRICT. FORT WORTH TO ACCOMPANY INSTRESH FLOW PROBLEMS AND NEEDS EVALUATION REPORT OF DECEMBER 1990 TO PLATE, 7



PRE-IMPOUNDMENT CONDITIONS

(PERIOD OF RECORD 1924-1954)

- - - POST-IMPOUNDMENT CONCITIONS

(PERIOD OF RECORD 1955-1979)

TRINITY RIVER BASIN, TEXAS

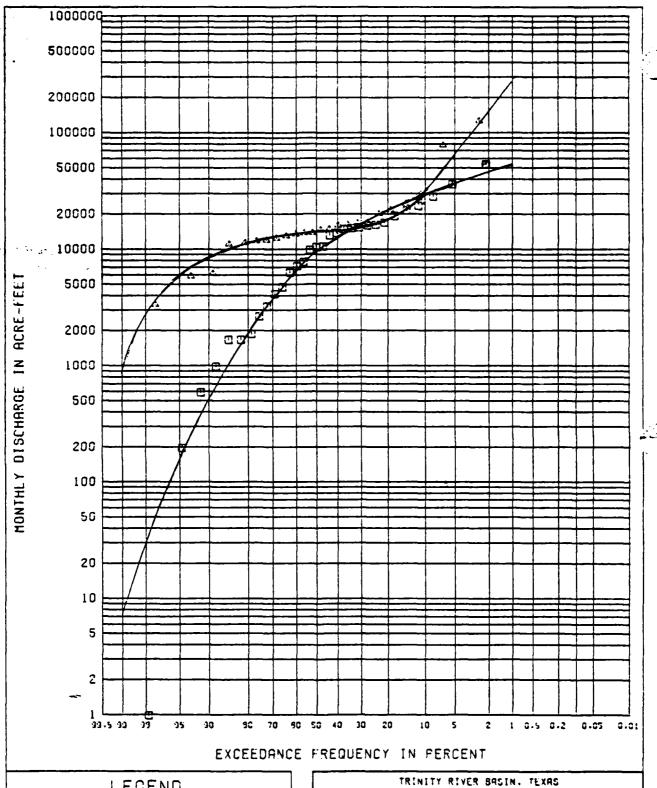
LEWISVILLE LAKE

DISCHARGE-FREQUENCY RELATIONS

AT DAM SITE

JULY FLOWS

U.S. ARMY ENGINEER DISTRICT. FORT WORTH
TO ACCOMPANY INSTREAM FLOW PROBLEMS AND WEEDS
EVALUATION REPORT OF DECEMBER 1980
PLATE 8



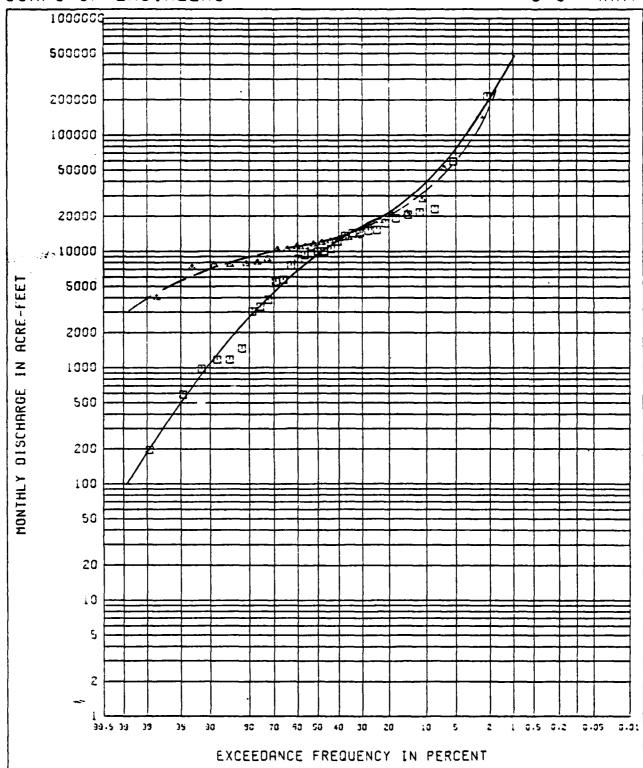
LECEND

-E PRE-IMPOUNCHENT CONDITIONS (PERIOD OF RECORD 1324-1354)

& POST-IMPOUNDMENT CONCITIONS (PERIOD OF RECORD 1055-1079)

LEHISVILLE LAKE DISCHARGE-FREQUENCY RELATIONS AT DAM SITE AUGUST FLOWS

U.S. ARMY ENGINEER DISTRICT. FORT WORTH TO ACCOMPANY INSTREAM FLOW PROBLEMS AND NEEDS EVALUATION REPORT OF DECEMBER 1990 - PLATE &



PRE-IMPOUNDMENT CONDITIONS (PERIOD OF RECORD 1924-1954)

— — → POST-IMPOUNDMENT CONDITIONS (PERIOD OF RECORD 1955-1978) TRINITY RIVER BASIN, TEXAS

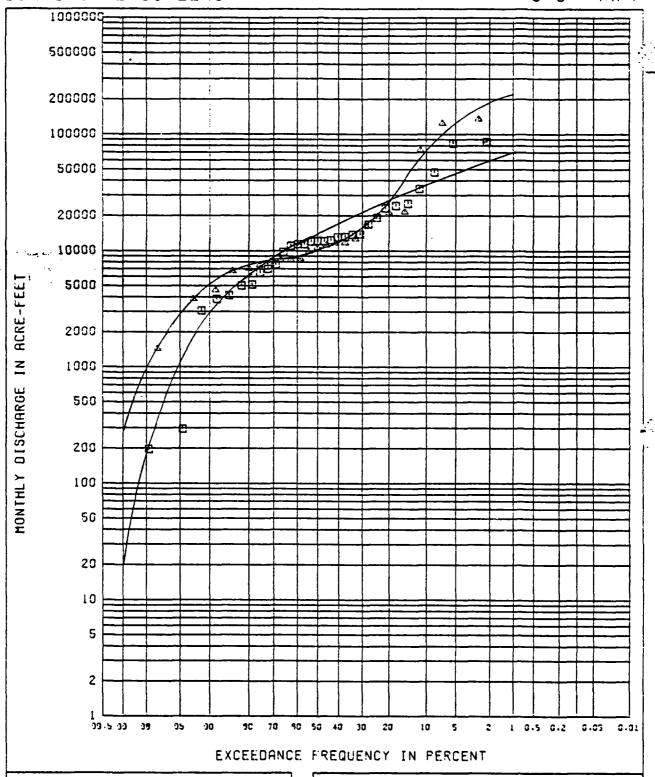
LEWISVILLE LAKE

DISCHARGE-FREQUENCY RELATIONS

AT DAM SITE

SEPTEMBER FLOWS

U.S. ARMY ENGINEER DISTRICT. FORT WORTH
TO ACCOMPANY INSTREAM FLOW PROBLEMS AND NEEDS
EVALUATION REPORT OF DECEMBER 1380
PLATE 9



9 -- E PRE-IMPOUNDMENT CONDITIONS
(PERIOD OF RECORD 1924-1954)

- - - POST-IMPOUNCHENT CONCITIONS
(PERIOD OF RECORD 1955-1979)

TRINITY RIVER BASIN, TEXAS

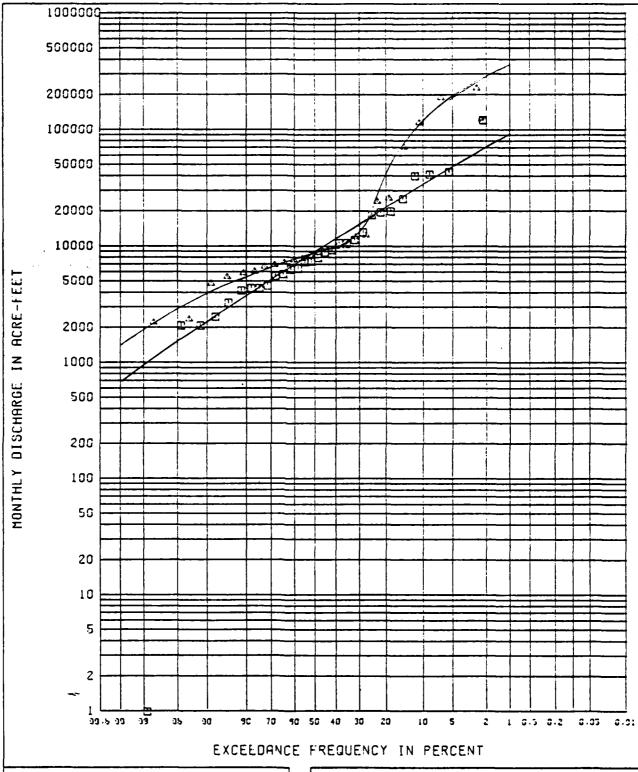
LEWISVILLE LAKE

DISCHARGE-FREQUENCY RELATIONS

AT DAM SITE

OCTOBER, FLOWS

U.S. ARMY ENGINEER DISTRICT. FORT WORTH TO ACCOMPANY INSTREAM FLOW PROBLEMS AND NEEDS EVALUATION REPORT OF DECEMBER 1980 PLATE TO



LECEND

9 -- PRE-IMPOUNDMENT CONDITIONS
(PERIOD OF RECORD 1924-1954)

- - - POST-IMPOUNDMENT CONDITIONS (PERIOD OF RECORD 1955-1979)

TRINITY RIVER BASIN, TEXAS

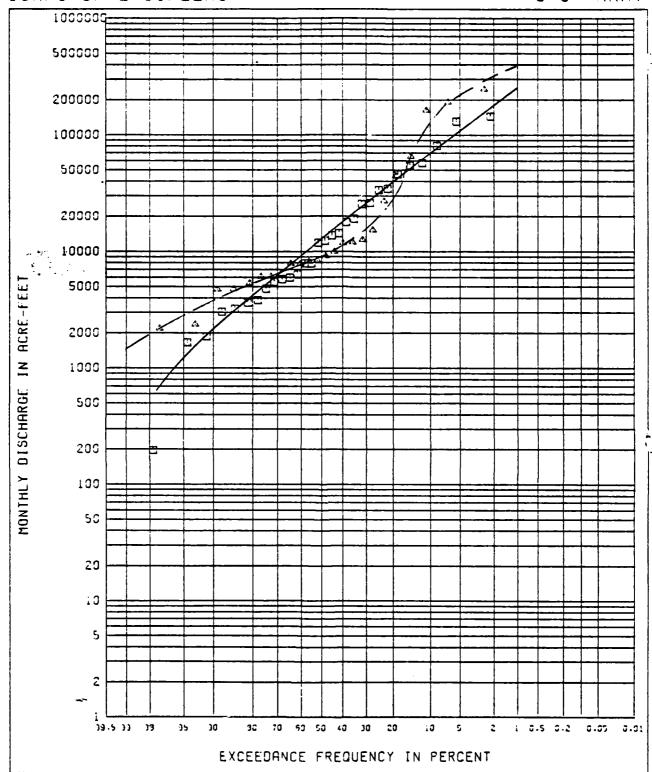
LEWISVILLE LAKE

DISCHARGE-FREQUENCY RELATIONS

AT DAM SITE

NOVEMBER FLOWS

U.S. ARMY ENGINEER DISTRICT. FORT WORTH
TO ACCOMPANY INSTREAM FLOW PROBLEMS AND NEEDS
EVALUATION REPORT OF DECEMBER 1990
PLATE 11



PRE-IMPOUNDMENT CONDITIONS

(PERIOD OF RECORD 1924-1954)

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TRINITY RIVER BASIN, TEXAS

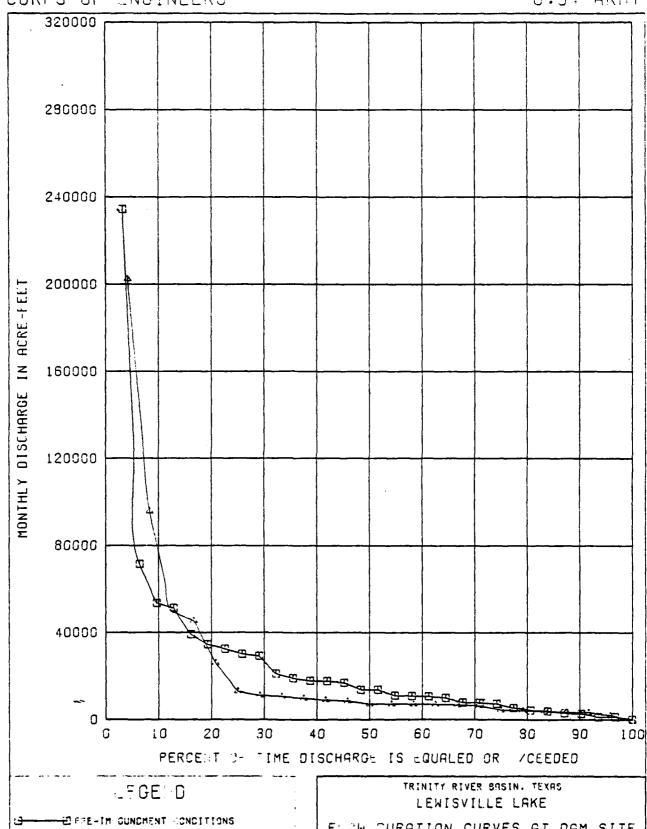
LEWISVILLE LAKE

DISCHARGE-FREQUENCY RELATIONS

AT DAM SITE

DECEMBER FLOWS

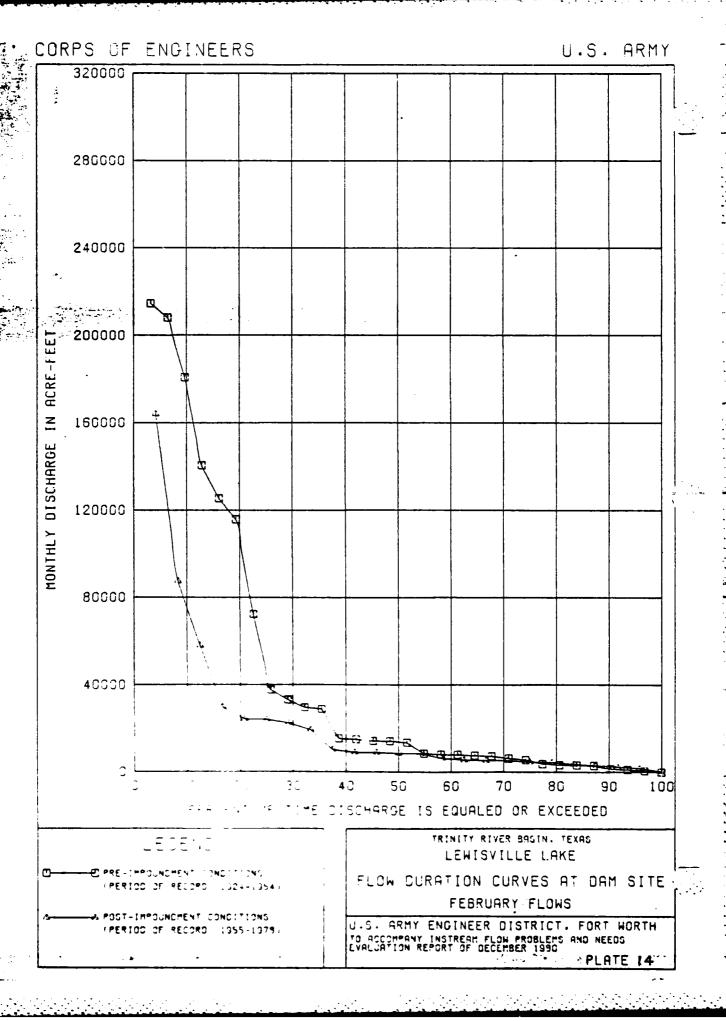
U.S. ARMY ENGINEER DISTRICT. FORT WORTH TO ACCOMPANY INSTREAM FLOW PROBLEMS AND NEEDS EVALUATION REPORT OF DECEMBER 1980 PLATE 12

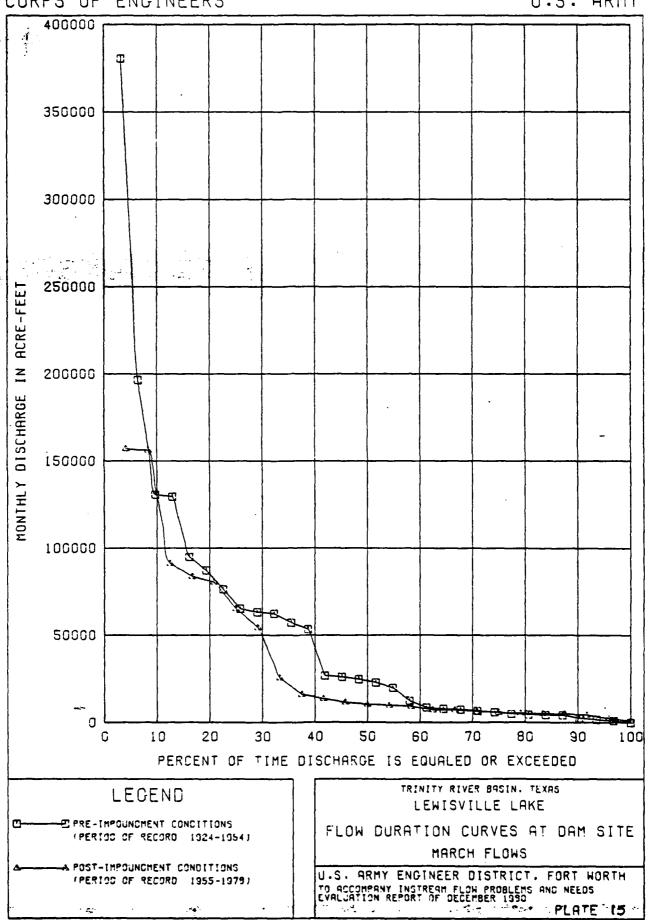


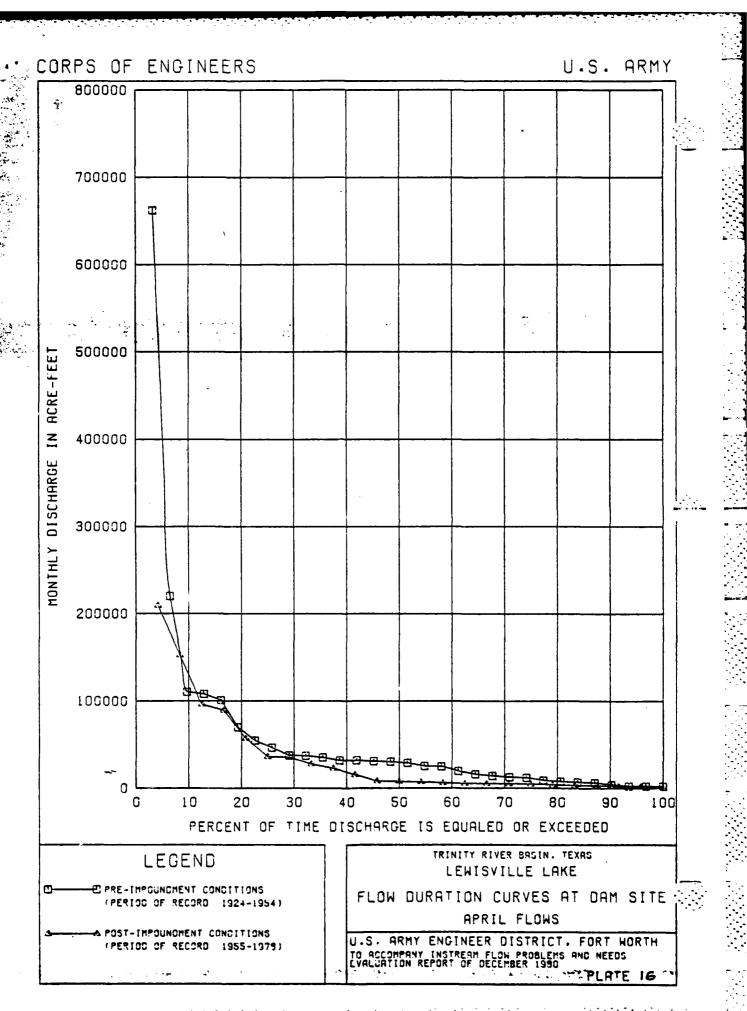
(PERIOD OF PECIRO 024-1954) POST-IMPOUNCHENT CONCITIONS (PERIOD 1 PECORD .355-1979)

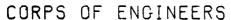
FLOW DURATION CURVES AT DAM SITE JANUARY FLOWS

U.S. ARMY ENGINEER DISTRICT. FORT WORTH TO ACCOMPANY INSTREAM FLOW PROBLEMS AND NEEDS EVALUATION REPORT OF DECEMBER 1990 "" PLATE 113

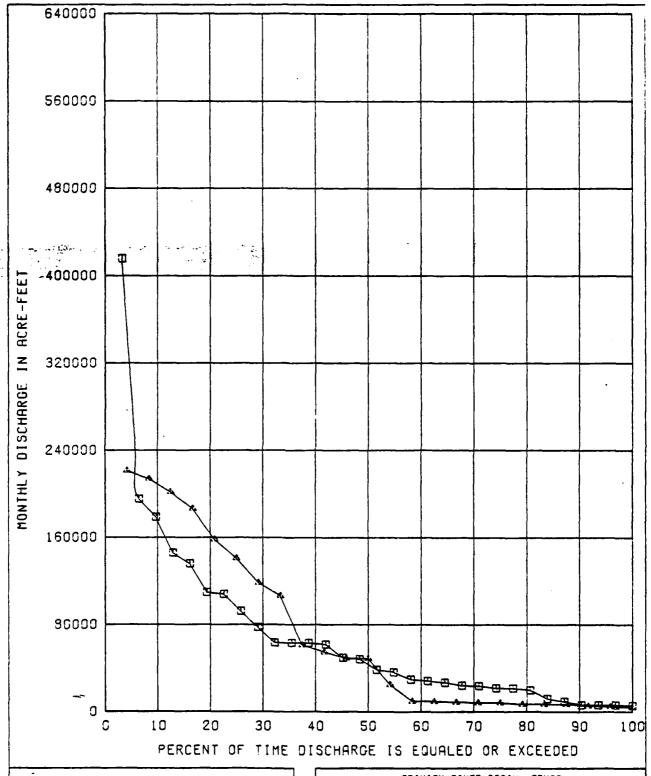








U.S. ARMY



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PRE-(MPOUNDMENT CONDITIONS (PERIOD OF RECORD 1924-1954)

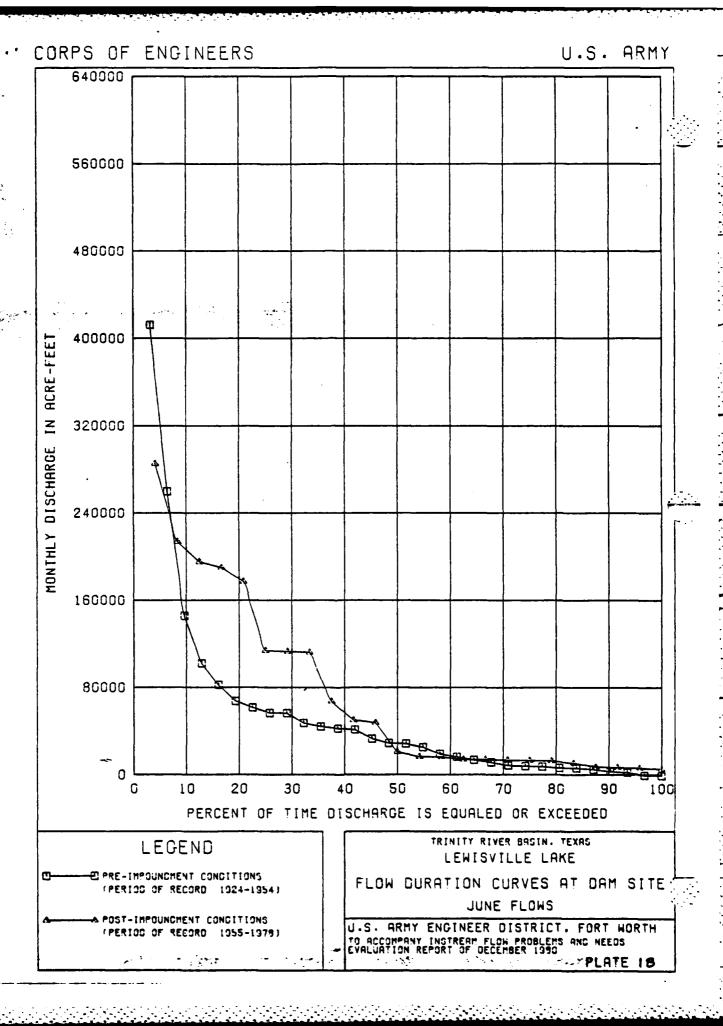
POST-IMPOUNDMENT CONDITIONS (PERIOD OF RECORD 1955-1978)

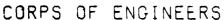
TRINITY RIVER BASIN. TEXAS LEWISVILLE LAKE

FLOW DURATION CURVES AT DAM SITE

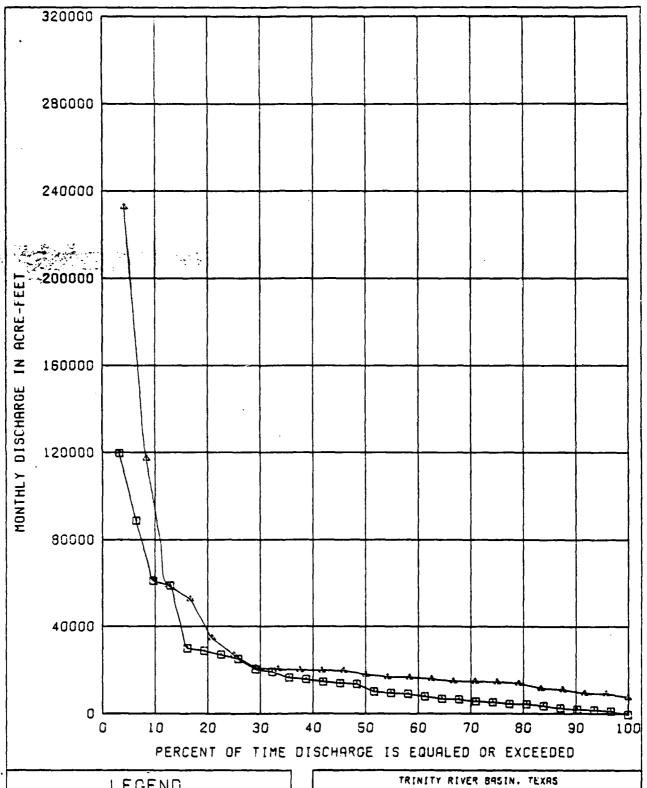
MAY FLOWS

U.S. ARMY ENGINEER DISTRICT. FORT WORTH TO ACCOMPANY INSTREAM FLOW PROBLEMS AND NEEDS EVALUATION REPORT OF DECEMBER 1980 PLATE 17





U.S. ARMY



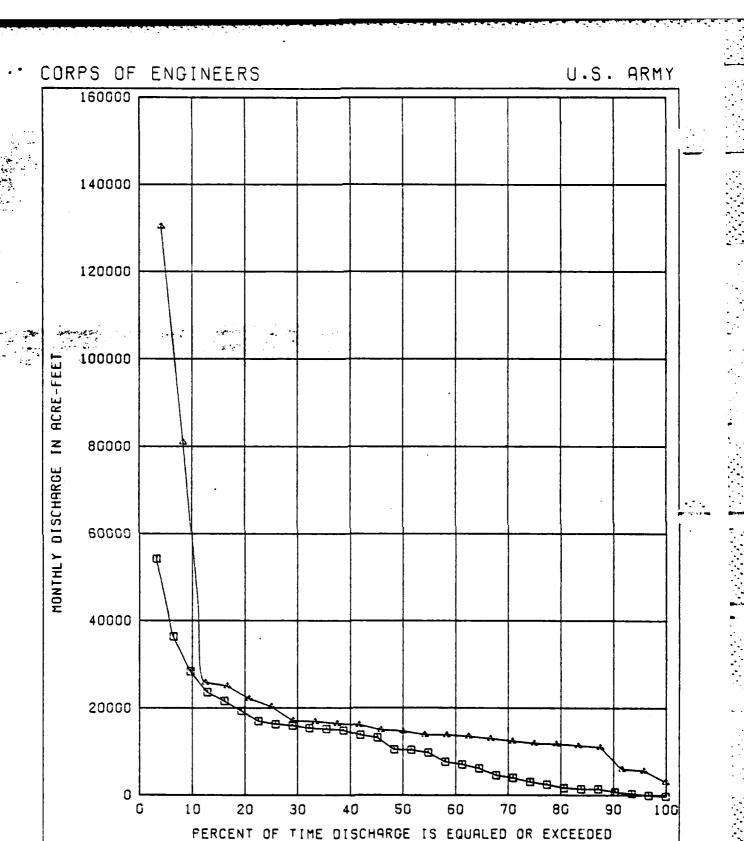
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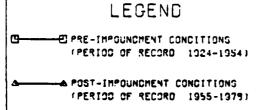
-E PRE-IMPOUNCMENT CONCITIONS (PERIOD OF RECORD 1924-1954)

A POST-IMPOUNGMENT CONDITIONS (PERIOD OF RECORD 1955-1979) LEWISVILLE LAKE

FLOW DURATION CURVES AT DAM SITE JULY FLOWS

U.S. ARMY ENGINEER DISTRICT. FORT HORTH TO ACCOMPANY INSTREM FLOW PROBLETS AND NEEDS EVALUATION REPORT OF DECEMBER 1990 PLATE PLATE 19





TRINITY RIVER BASIN. TEXAS

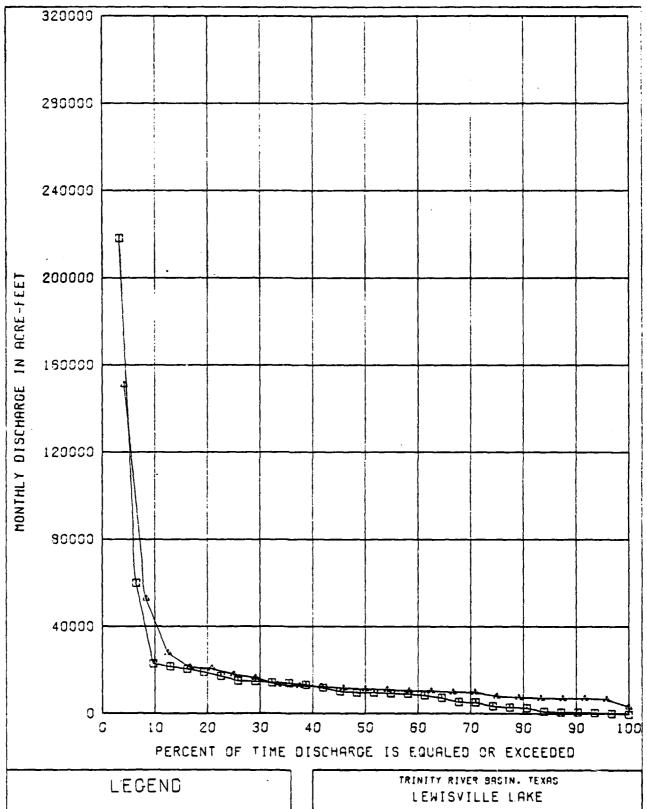
LEWISVILLE LAKE

FLOW DURATION CURVES AT DAM SITE

AUGUST FLOWS

U.S. ARMY ENGINEER DISTRICT. FORT WORTH TO ACCOMPANY INSTREAM FLOW PROBLEMS AND NEEDS EVALUATION REPORT OF DECEMBER 1990

"PLATE 20



PRE-IMPOUNDMENT CONDITIONS

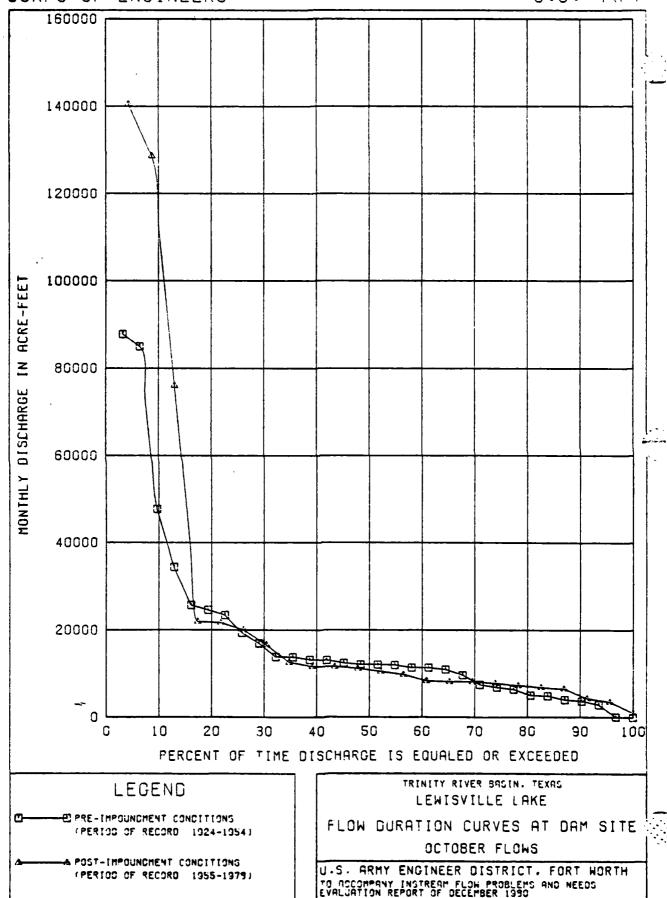
(PERIOD OF RECORD 1924-1954)

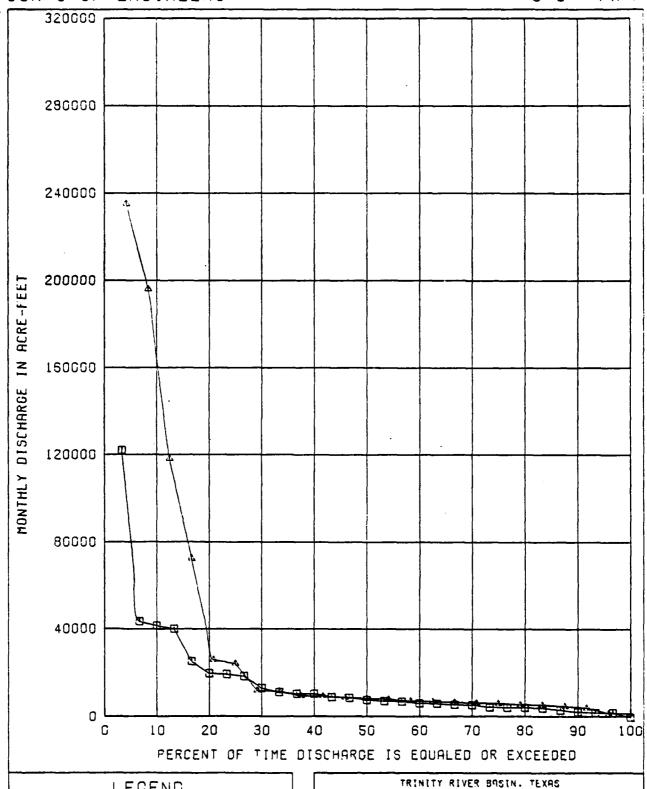
POST-IMPOUNDMENT CONDITIONS (PERIOD OF RECORD 1955-1979)

FLOW DURATION CURVES AT DAM SITE SEPTEMBER FLOWS

U.S. ARMY ENGINEER DISTRICT. FORT WORTH TO ACCOMPANY INSTREAM FLOW PROBLEMS AND NEEDS EVALUATION REPORT OF DECEMBER 1990 PLATE ZI

"PLATE 22





PRE-IMPOUNDMENT CONCITIONS
(PERIOD OF RECORD 1924-1954)

A POST-IMPOUNCHENT CONCITIONS (PERIOD OF RECORD 1955-1978)

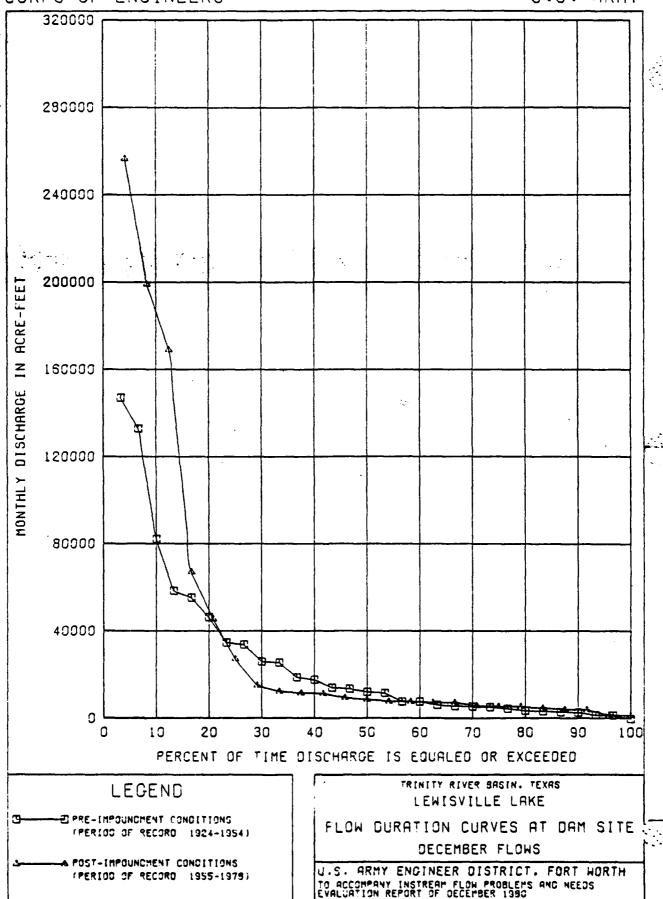
RINITY RIVER BOSIN. TEXAS LEWISVILLE LAKE

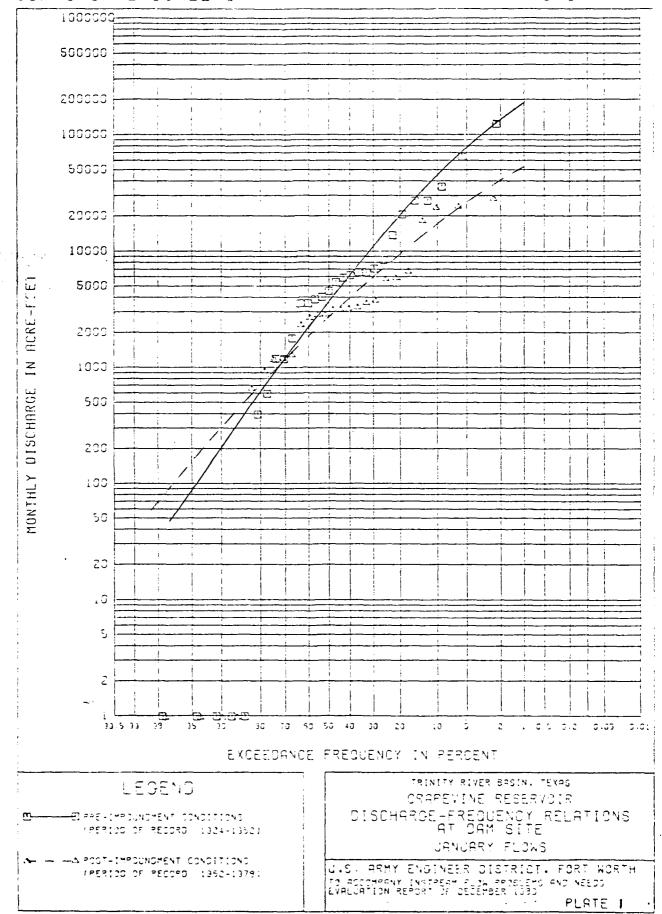
FLOW DURATION CURVES AT DAM SITE NOVEMBER FLOWS

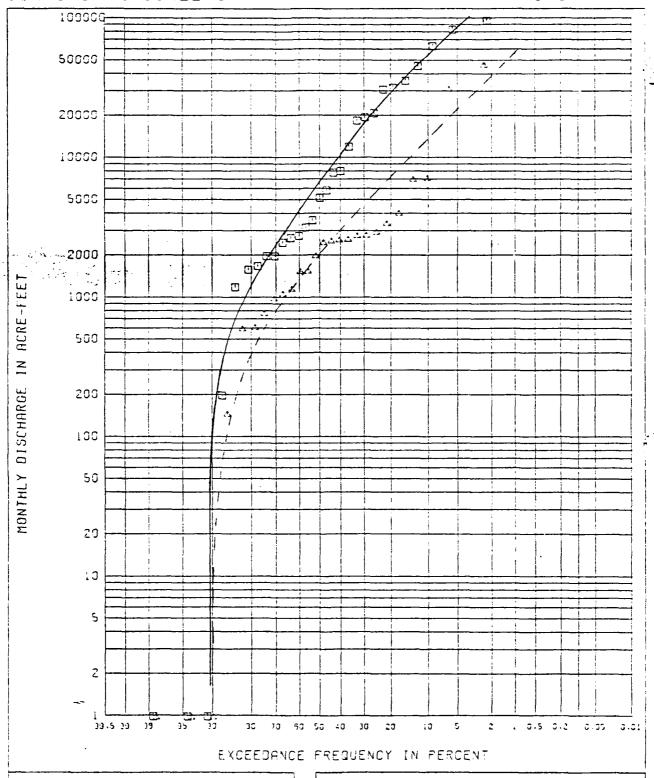
U.S. ARMY ENGINEER DISTRICT. FORT WORTH TO ACCOMPANY INSTREM FLOW PROBLEMS AND NEEDS EVALUATION REPORT OF DECEMBER 1990

PLATE 23

. PLATE 24







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O----- 전 PPE-IMPOUNDMENT CONDITIONS (PERIOD OF RECORD 1924-1952)

→ → POST-IMPOUNDMENT CONDITIONS

(PERIOD OF RECORD 1992-1979)

TRINITY RIVER BASIN, TEXAS

ORAPEVINE RESERVOIR

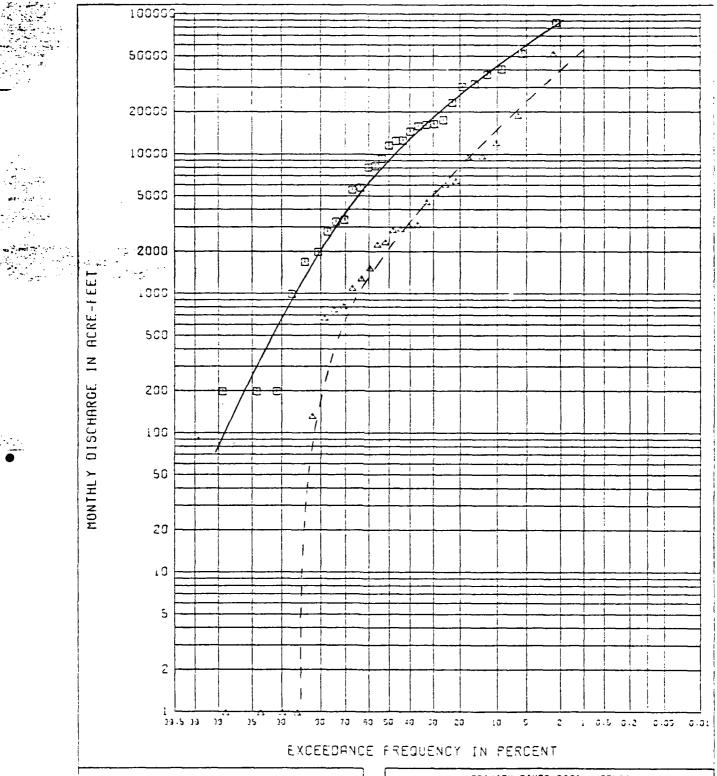
OISCHARGE-FREQUENCY RELATIONS

AT DAM SITE

FEBRUARY FLOWS

U.S. ARMY ENGINEER DISTRICT. FORT WORTH
TO ACCOMPANY INSTREM FLOW PROBLEMS AND NEEDS
EVALUATION REPORT OF DECEMBER 1990
PLATE 2

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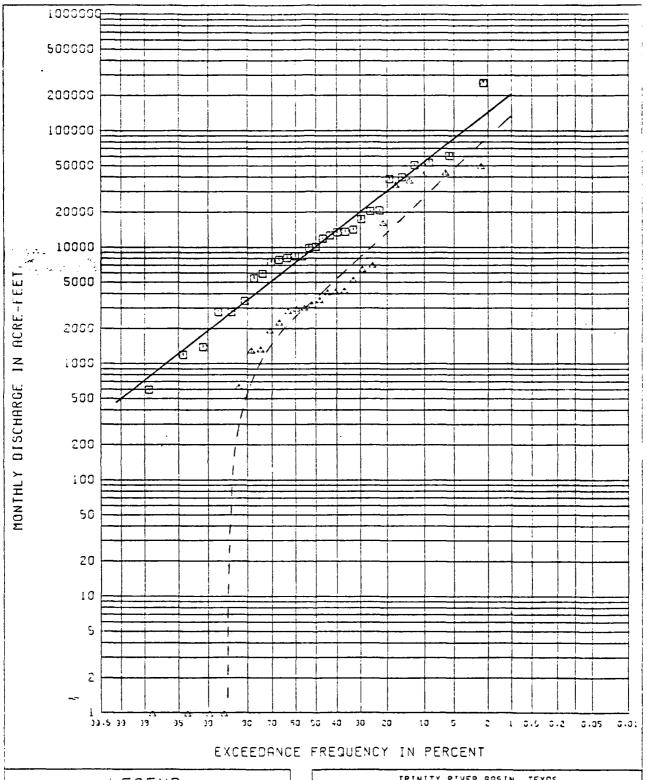
LEGEND

-EL PRE-IMPOUNDMENT CONDITIONS (PERIOD OF RECORD 1924-1952)

-- POST-IMPOUNDMENT CONDITIONS (PERIOD OF RECORD (1952-1979)

TRINITY RIVER BASIN. TEXAS GRAPEVINE RESERVOIR DISCHARGE-FREQUENCY RELATIONS AT DAM SITE MARCH FLOWS

U.S. ARMY ENGINEER DISTRICT. FORT WORTH TO ACCOMPANY INSTREAM FLOW PROSLEMS AND NEEDS EVALUATION REPORT OF DECEMBER 1930 PLATE



☐ PRE-IMPOUNDMENT CONDITIONS

(PERIOD OF RECORD 1024-1052)

► — → POST-IMPOUNCHENT CONDITIONS
(PERIOD OF RECORD (952-1979)

TRINITY RIVER SASIN. TEXAS

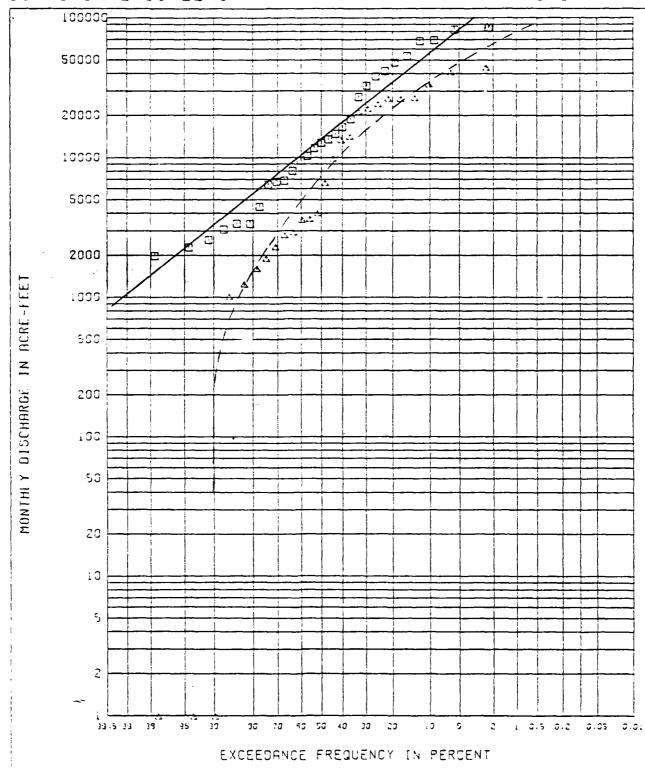
GRAPEVINE RESERVOIR

DISCHARGE-FREQUENCY RELATIONS

AT DAM SITE

APRIL FLOWS

U.S. ARMY ENGINEER DISTRICT. FORT WORTH TO ACCOMPANY INSTREAM FLOW PROBLEMS AND NEEDS EVALUATION REPORT OF DECEMBER 1980



G --- E PRE-IMPOUNCHENT CONDITIONS (PERIOD OF RECORD 1024-1052)

- — — POST-IMPOUNDMENT CONCITIONS (PERIOD OF RECORD 1952-1979)

TRINITY RIVER BOSIN, TEXAS

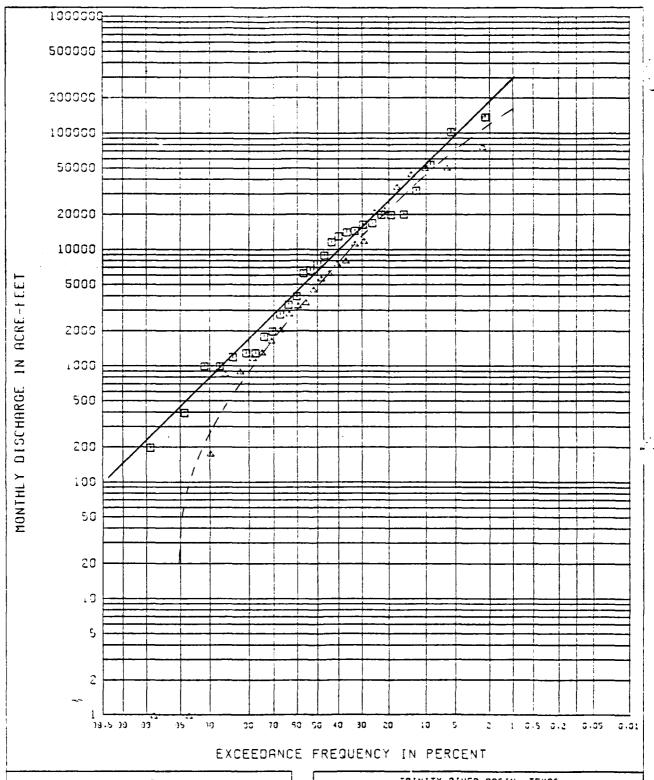
ORAPEVINE RESERVOIR

DISCHARGE-FREQUENCY RELATIONS

AT DAM SITE

MAY FLOWS

U.S. SRMY ENGINEER DISTRICT, FORT WORTH
TO ACCOMPANY INSTREAM FLOW PROBLEMS AND NEEDS
EVALUATION REPORT OF DECEMBER 1390
PLATE 5



PRE-IMPOUNDMENT CONDITIONS

(PERIOD OF RECORD 1924-1952)

— — → POST-IMPOUNDMENT CONDITIONS

(PERIOD OF RECORD 1952-1979)

TRINITY RIVER BOSIN, TEXAS

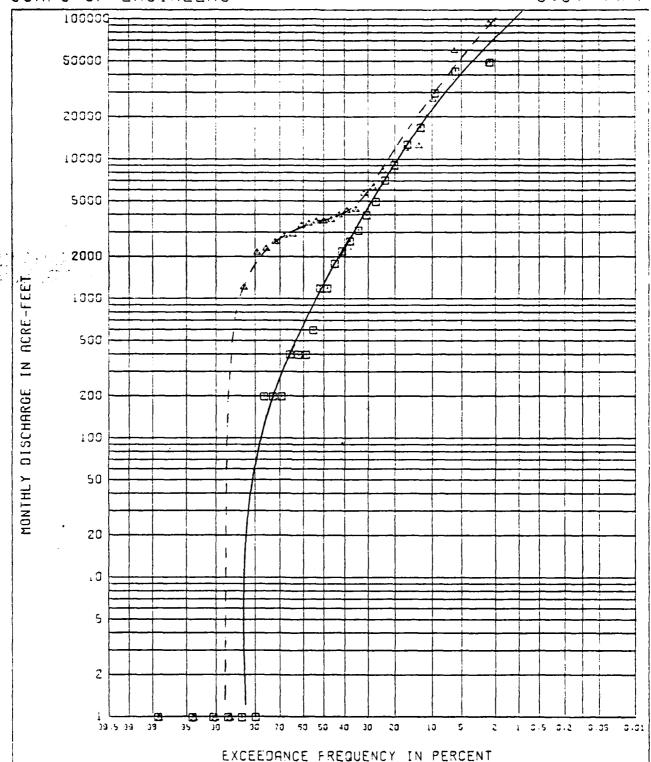
ORAPEVINE RESERVOIR

DISCHARGE-FREQUENCY RELATIONS

AT DAM SITE

JUNE FLOWS

U.S. ARMY ENGINEER DISTRICT. FORT WORTH
TO ACCOMPANY INSTREAM FLOW PROBLEMS AND NEEDS
EVALUATION REPORT OF DECEMBER 1390
PLATE 6



LEGEND

PRE-IMPOUNDMENT CONDITIONS
(PERIOD OF RECORD 1924-1952)

► → → POST-IMPOUNDMENT CONDITIONS

(PERIOD OF RECORD 1952-1979)

TRINITY RIVER BOSIN. TEXAS

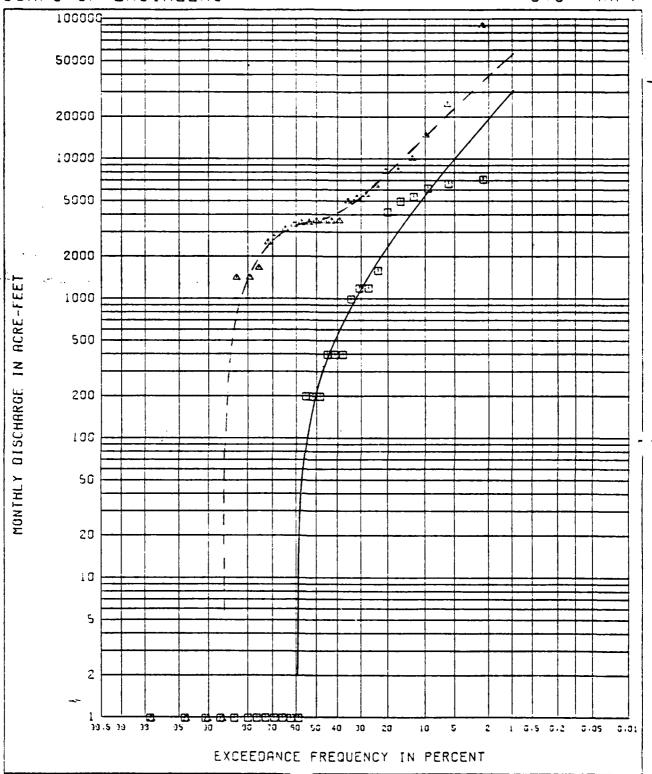
GRAPEVINE RESERVOIR

DISCHARGE-FREQUENCY RELATIONS

AT DAM SITE

JULY FLOWS

U.S. GRMY ENGINEER DISTRICT. FORT WORTH TO ACCOMPANY INSTREAM FLOW PROBLEMS AND NEEDS EVALUATION REPORT OF DECEMBER 1990 PLATE 7. "



PRE-IMPOUNDMENT CONDITIONS
(PERIOD OF RECORD 1924-1952)

— — — POST-IMPOUNDMENT CONDITIONS (PERIOD OF RECORD 1952-1979) TRINITY RIVER BASIN, TEXAS

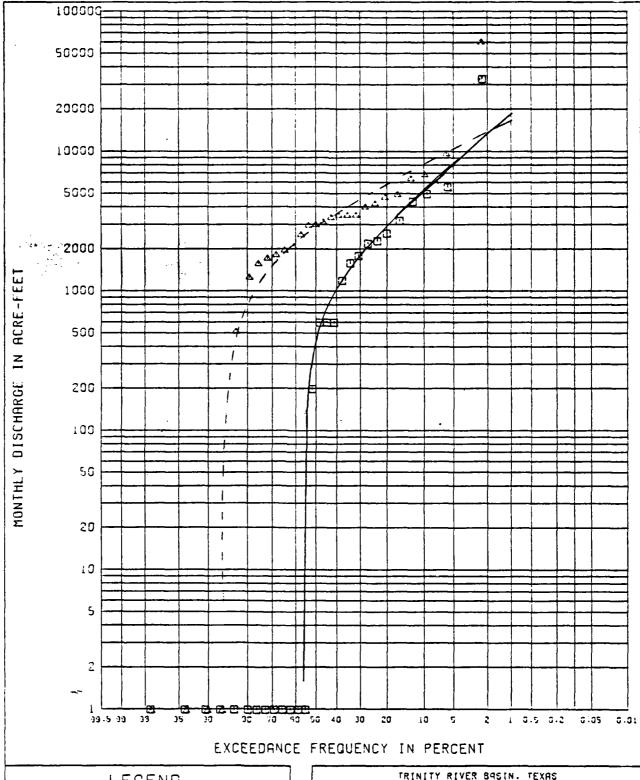
GRAPEVINE RESERVOIR

DISCHARGE-FREQUENCY RELATIONS

AT DAM SITE

AUGUST FLOWS

U.S. ARMY ENGINEER DISTRICT. FORT WORTH TO ACCOMPANY INSTREAM FLOW PROBLEMS AND NEEDS EVALUATION REPORT OF DECEMBER 1390 PLATE'S



PRE-IMPOUNDMENT CONDITIONS
(PERIOD OF RECORD 1924-1952)

→ — → POST-IMPOUNDMENT CONDITIONS (PERIOD OF RECORD 1992-1979) TRINITY RIVER BASIN, TEXAS

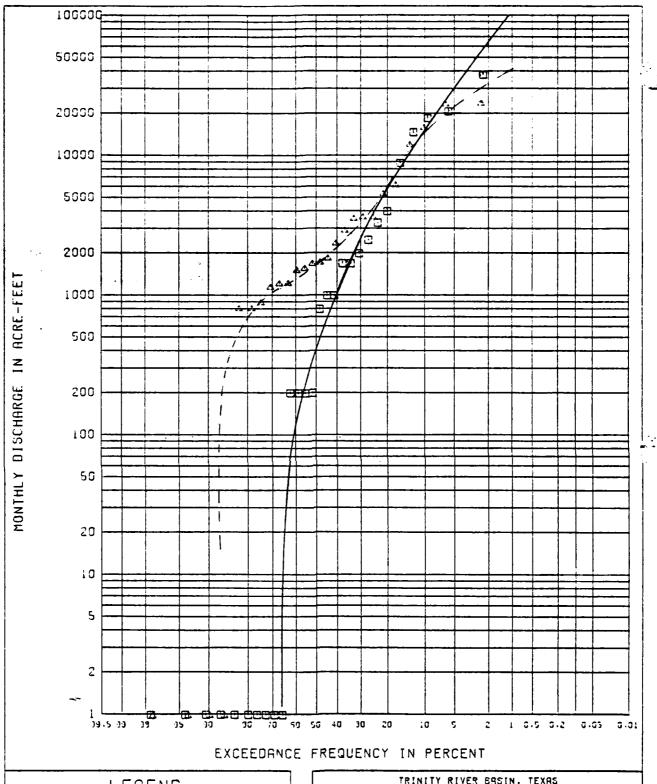
GRAPEVINE RESERVOIR

DISCHARGE-FREQUENCY RELATIONS

AT DAM SITE

SEPTEMBER FLOWS

U.S. ARMY ENGINEER DISTRICT. FORT WORTH
TO ACCOMPANY INSTREAM FLOH PROBLEMS AND NEEDS
EVALUATION REPORT OF DECEMBER 1980
"PLATE 9



LEGEND

PRE-IMPOUNDMENT CONDITIONS
(PERIOD OF SECOND 1924-1952)

-- -- POST-IMPOUNDMENT CONDITIONS
(PERIOD OF RECORD 1952-1979)

TRINITY RIVER BASIN, TEXAS

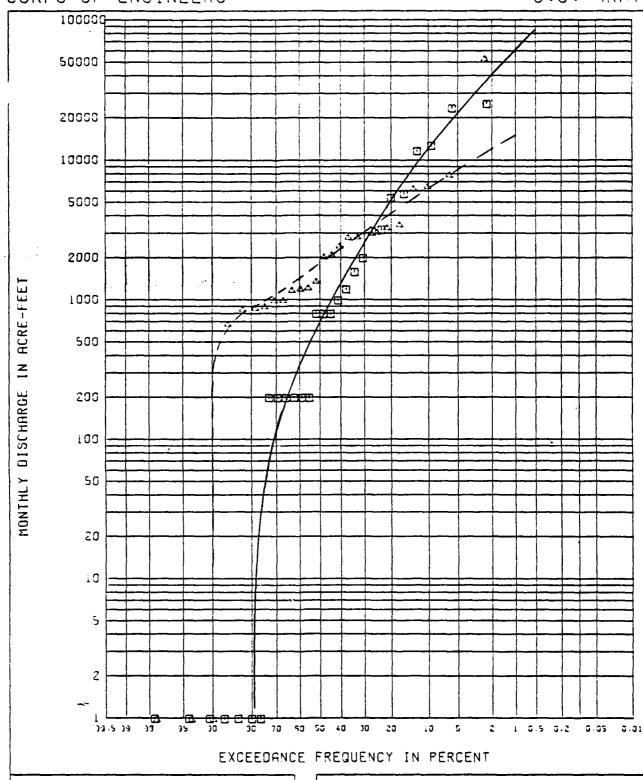
GRAPEVINE RESERVOIR

DISCHARGE-FREQUENCY RELATIONS

AT DAM SITE

OCTOBER FLOWS

U.S. ARMY ENGINEER DISTRICT. FORT WORTH
TO ACCOMPANY INSTREAM FLOH PROBLEMS AND NEEDS
EVALUATION REPORT OF DECEMBER 1990
PLATE 10



LEGEND

PERIOD OF RECORD 1924-1952)

- -- POST-IMPOUNDMENT CONDITIONS
(PERIOD OF RECORD 1952-1979)

TRINITY RIVER BASIN, TEXAS

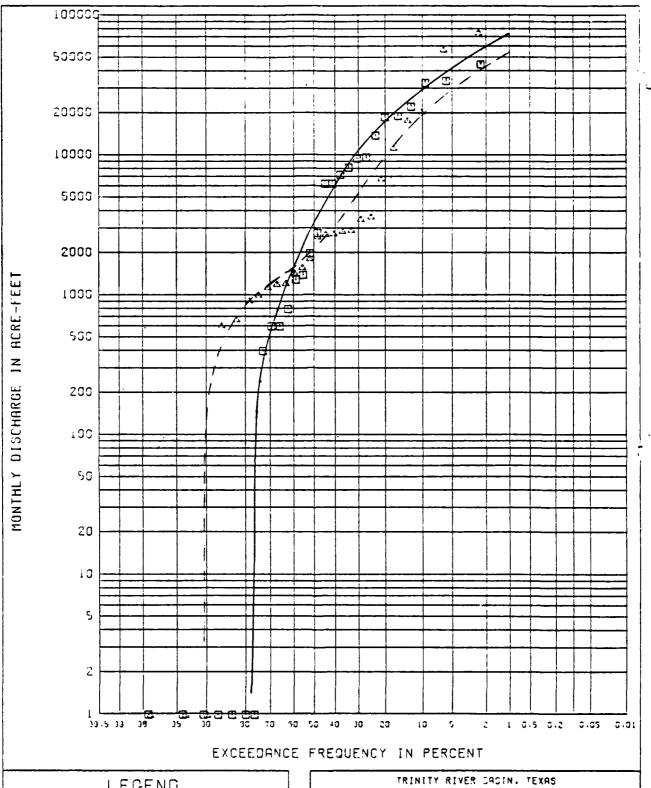
GRAPEVINE RESERVOIR

DISCHARGE-FREQUENCY RELATIONS

AT DAM SITE

NOVEMBER FLOWS

U.S. ARMY ENGINEER DISTRICT. FORT WORTH TO ACCOMPANY INSTREAM FLOW PROBLEMS AND NEEDS EVALUATION REPORT OF DECEMBER 1980 "PLATE 11



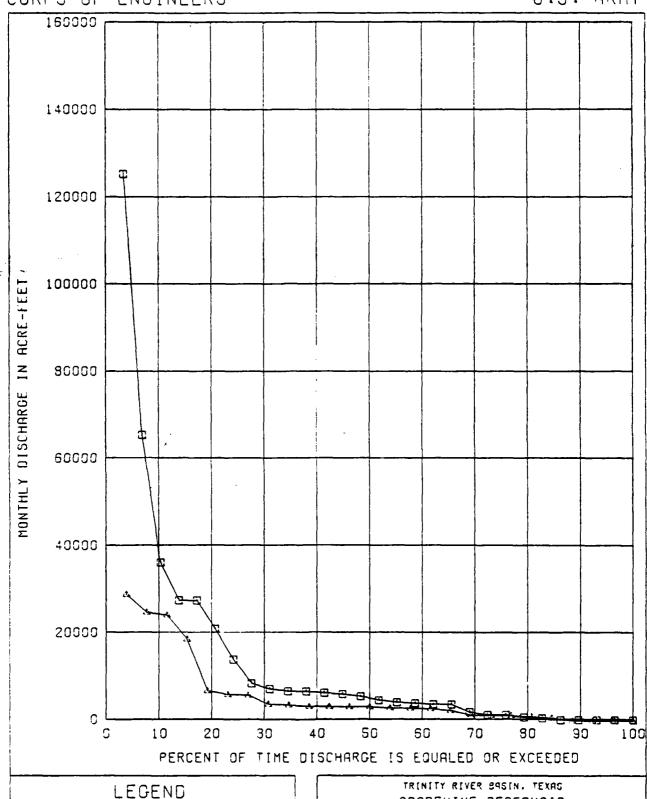
LEGEND

E PRE-IMPOUNDMENT CONDITIONS (PERIOD OF RECORD | 924-1952)

- POST-IMPOUNDMENT CONDITIONS (PERIOD OF RECORD 1952-1979)

GRAPEVINE RESERVOIR DISCHARGE-FREQUENCY RELATIONS AT DAM SITE DECEMBER FLOWS

U.S. ARMY ENGINEER DISTRICT. FORT WORTH TO ACCOMPANY INSTREAM FLOW PROBLEMS AND NEEDS EVALUATION REPORT OF DECEMBER 1990 PLATE 12

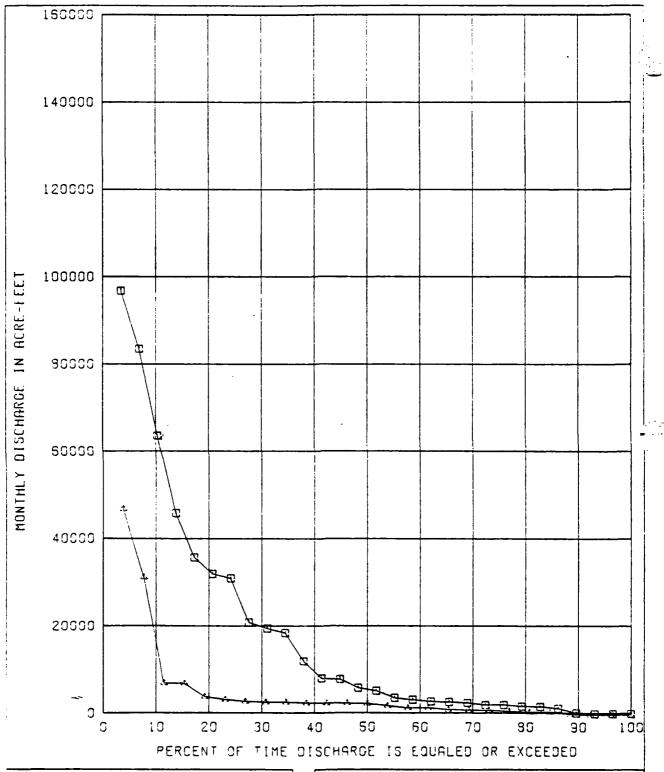


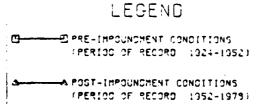
€ PRE-IMPOUNCHENT CONDITIONS (PERIOD OF RECORD 1924-1952)

POST-IMPOUNDMENT CONDITIONS (PERIOD OF RECORD 1952-1979) ORAPEVINE RESERVOIR

FLOW DURATION CURVES AT DAM SITE JANUARY FLOWS

U.S. ARMY ENGINEER DISTRICT. FORT WORTH TO ACCOMPANY INSTREAM FLOW PROBLEMS AND NEEDS EVALUATION REPORT OF DECEMBER 1990 PLATE 13

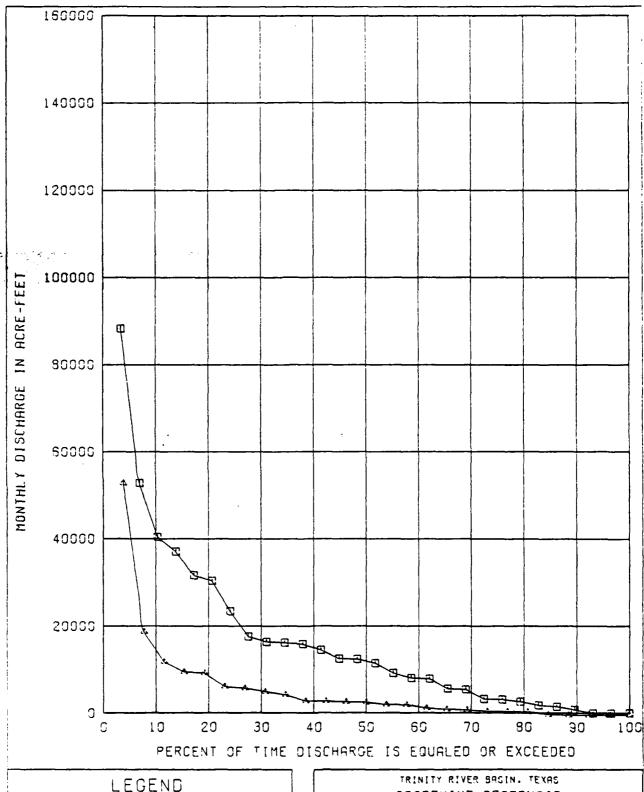


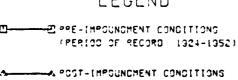


TRINITY RIVER BASIN. TEXAS
CRAPEVINE RESERVOIR

FLOW DURATION CURVES AT DAM SITE : FEBRUARY FLOWS

U.S. ARMY ENGINEER DISTRICT. FORT WORTH
TO ACCOMPANY INSTREMM FLOH PROBLEMS AND NEEDS
EVALUATION REPORT OF DECEMBER 1990
PLATE 14



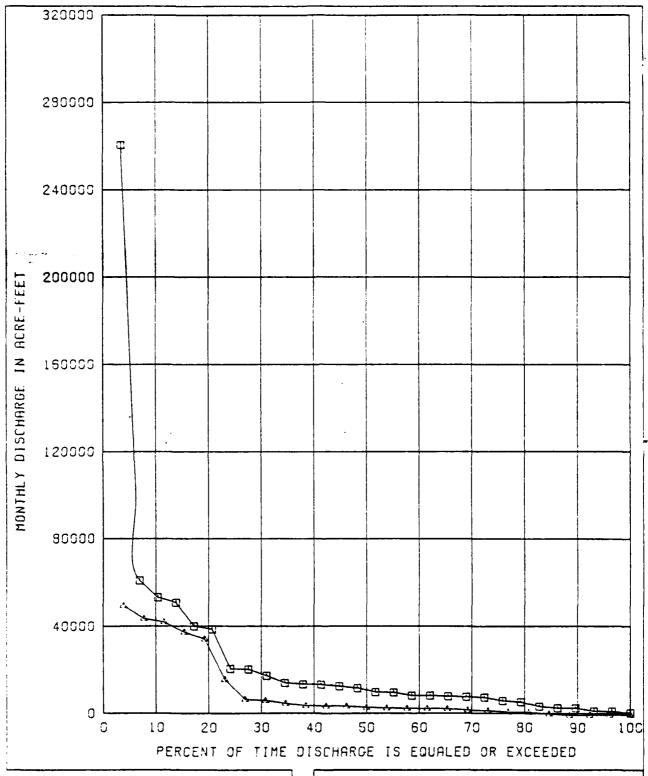


(PERIOD OF RECORD 1952-1979)

CRAPEVINE RESERVOIR

FLOW DURATION CURVES AT DAM SITE MARCH FLOWS

U.S. ARMY ENGINEER DISTRICT. FORT WORTH TO ACCOMPANY INSTREAM FLOW PROBLEMS AND NEEDS LYALUATION REPORT OF DECEMBER 1980 :-PLATE 15





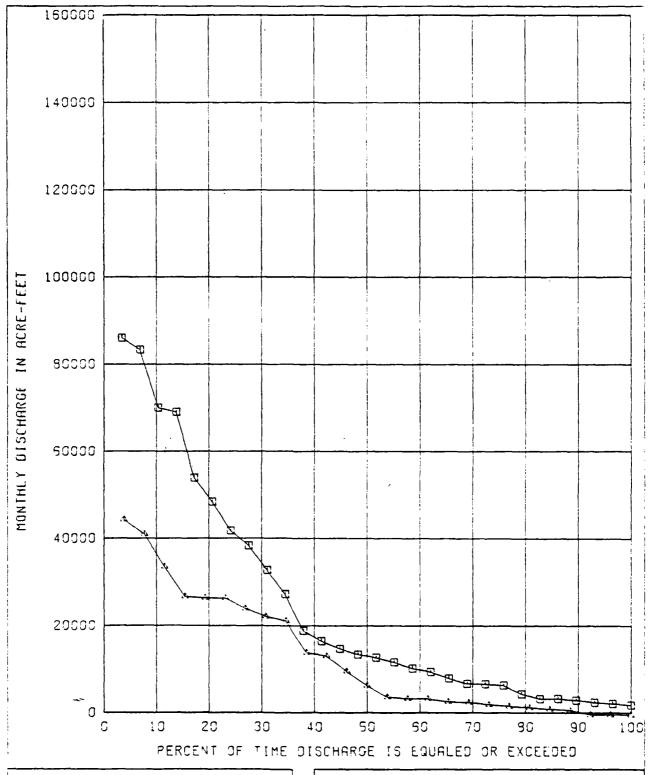
9 ---- PRE-IMPOUNDMENT CONDITIONS
(PERIOD OF RECORD 1924-1952)

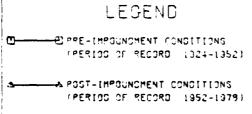
POST-IMPOUNDMENT CONDITIONS (PERIOD OF RECORD 1952-1979)

TRINITY RIVER BASIN. TEXAS GRAPEVINE RESERVOIR

FLOW DURATION CURVES AT DAM SITE APRIL FLOWS

U.S. ARMY ENGINEER DISTRICT. FORT WORTH TO ACCOMPANY INSTREST FLOW PROBLETS AND NEEDS EVALUATION REPORT OF DECEMBER 1980

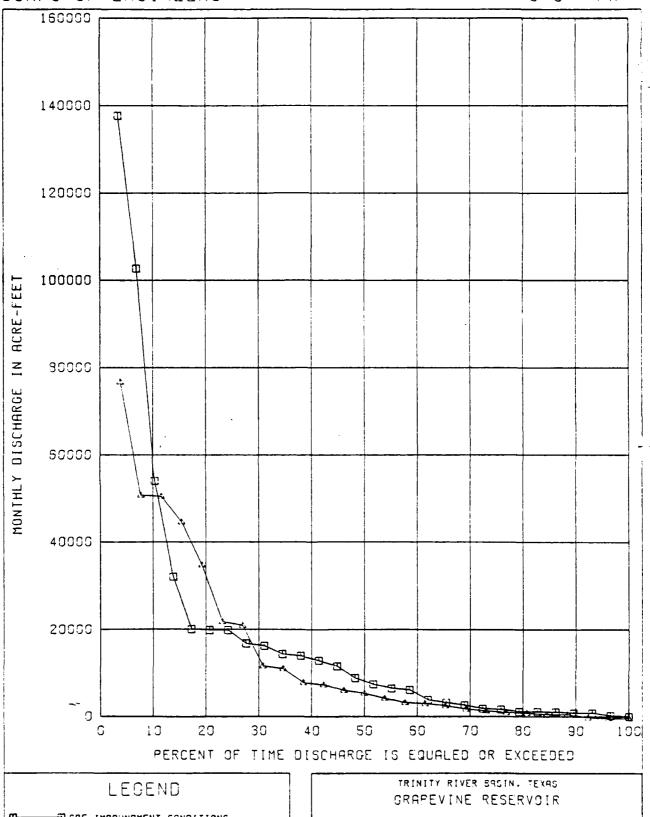




TRINITY RIVER SASIN. TEXAS GRAPEVINE RESERVOIR

FLOW DURATION CURVES AT DAM SITE MAY FLOWS

U.S. ARMY ENGINEER DISTRICT. FORT WORTH
TO ACCOMPANY INSTREM FLOW PROBLEMS AND NEEDS
EVALUATION REPORT OF DECEMBER 1390
PLATE 17



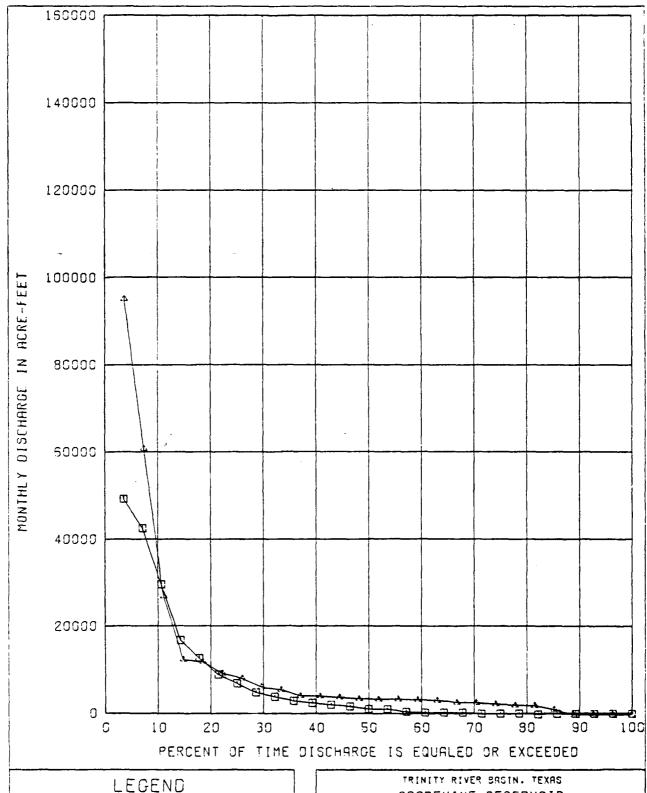
PRE-IMPOUNDMENT CONDITIONS (PERIOD OF RECORD 1924-1952)

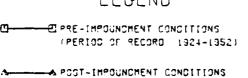
→ POST-IMPOUNDMENT CONDITIONS /PERIOD OF RECORD 1952-1978) FLOW DURATION CURVES AT DAM SITE

JUNE FLOWS

U.S. ARMY ENGINEER DISTRICT. FORT WORTH TO ACCOMPANY INSTREAM FLOW PROBLEMS AND NEEDS EVALUATION REPORT OF DECEMBER 1930

PLATE 18





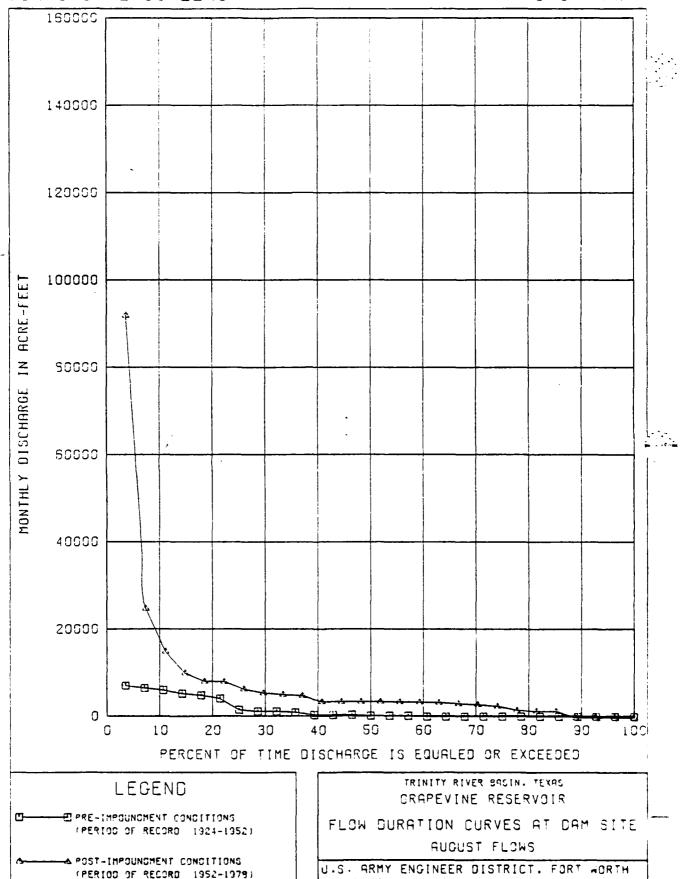
(PERIOD OF RECORD 1952-1979)

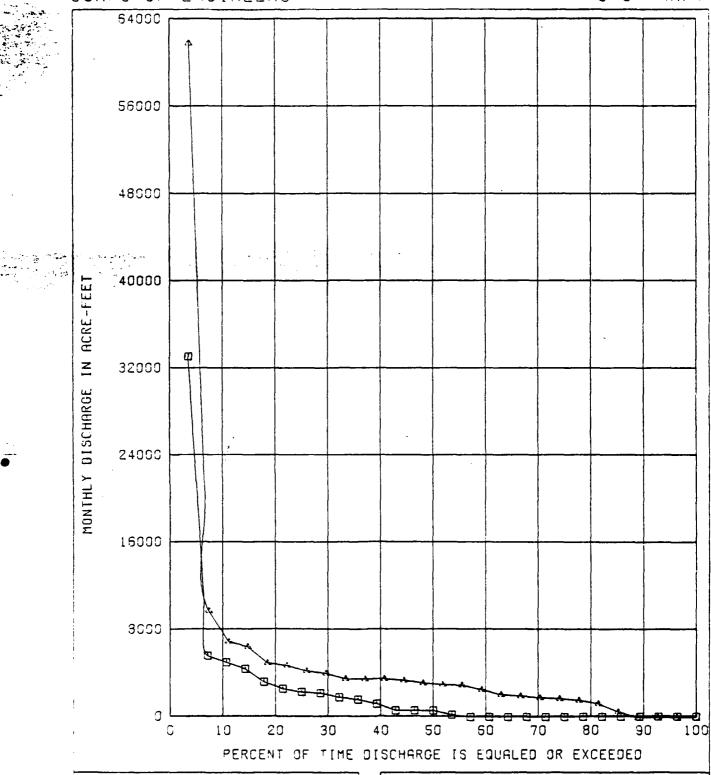
CRAFEVINE RESERVOIR

FLOW DURATION CURVES AT DAM SITE JULY FLOWS

U.S. ARMY ENGINEER DISTRICT, FORT WORTH PLATE 19

PLATE 20







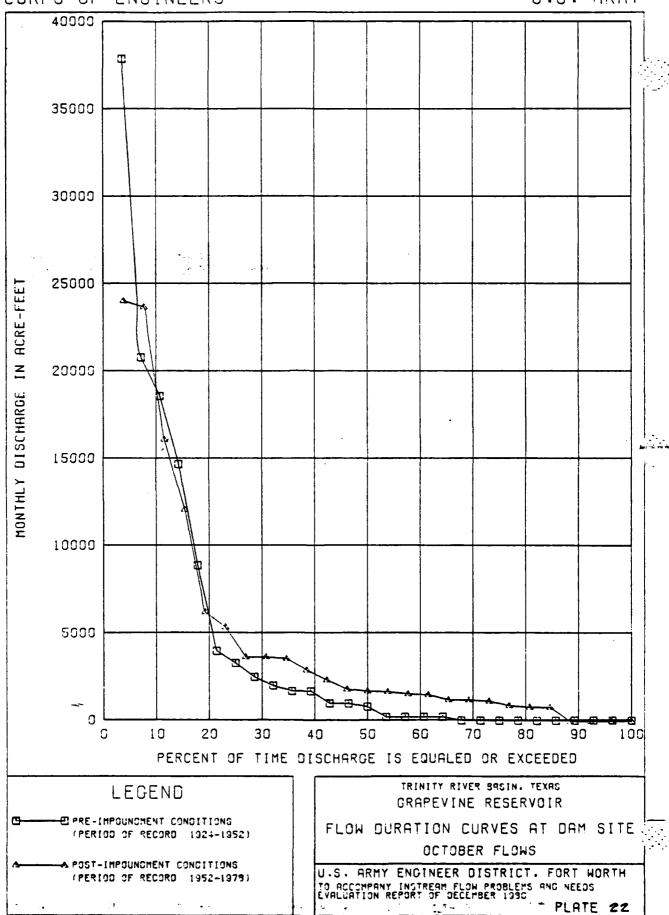
POST-IMPOUNDMENT CONDITIONS (PERIOD OF RECORD 1952-1979)

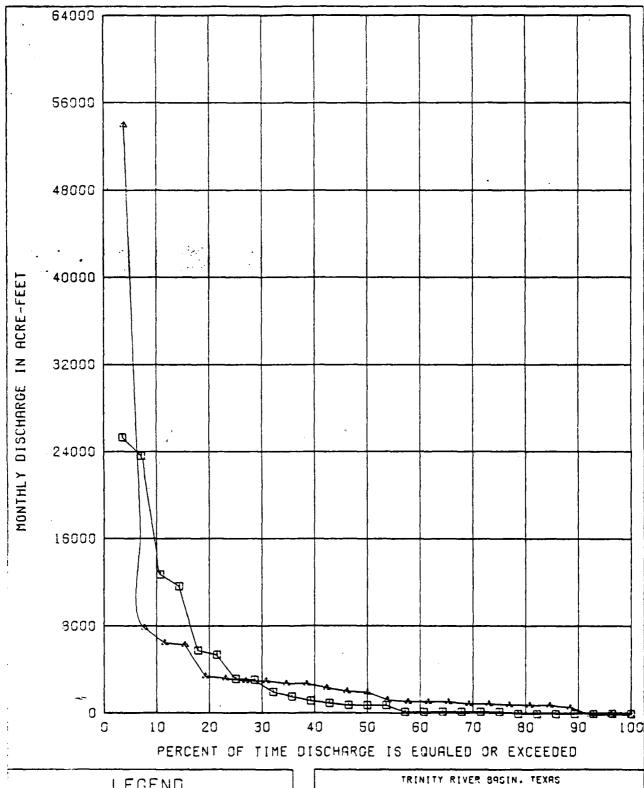
TRINITY RIVER BASIN. TEXAS CRAPEVINE RESERVOIR

FLOW DURATION CURVES AT DAM SITE SEPTEMBER FLOWS

U.S. ARMY ENGINEER DISTRICT. FORT HORTH
TO ACCOMPANY INSTREAM FLOW PROBLEMS AND NEEDS
EVALUATION REPORT OF DECEMBER 1980

" PLATE 21





PRE-IMPOUNDMENT CONDITIONS (PERIOD OF RECORD 1924-1952)

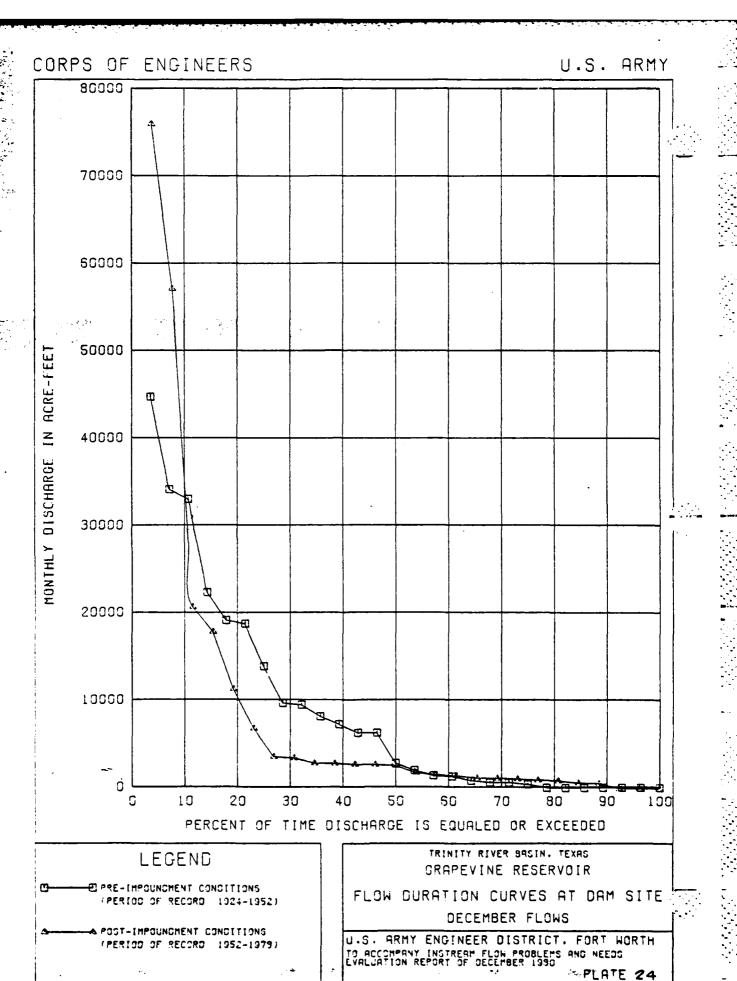
> POST-IMPOUNDMENT CONDITIONS (PERIOD OF RECORD 1952-1979)

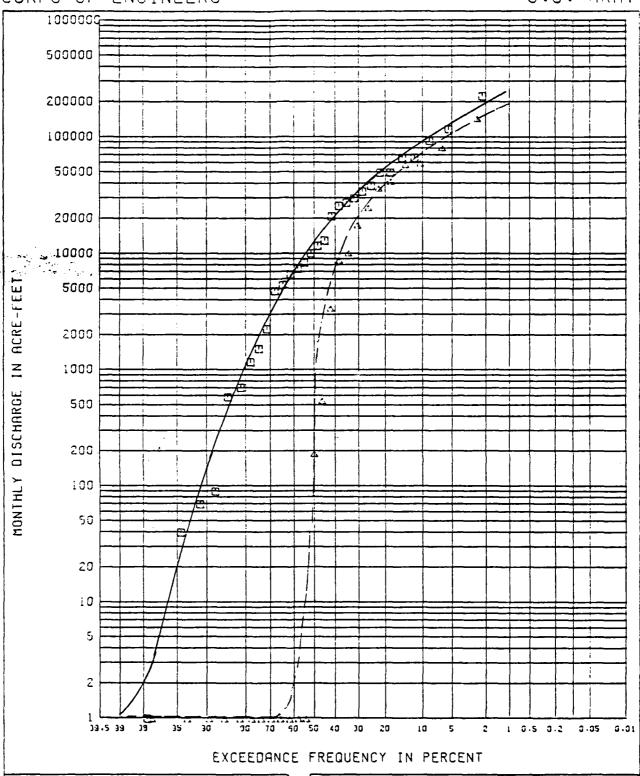
GRAFEVINE RESERVOIR

FLOW DURATION CURVES AT DAM SITE NOVEMBER FLOWS

U.S. ARMY ENGINEER DISTRICT. FORT WORTH TO ACCOMPANY INSTREAM FLOW PROBLEMS AND NEEDS EVALUATION REPORT OF DECEMBER 1990

" PLATE "25





PRE-IMPOUNDMENT CONDITIONS

(PERIOD OF RECORD 1924-1953)

- --> POST-IMPOUNDMENT CONDITIONS
(PERIOD OF RECORD 1954-1979)

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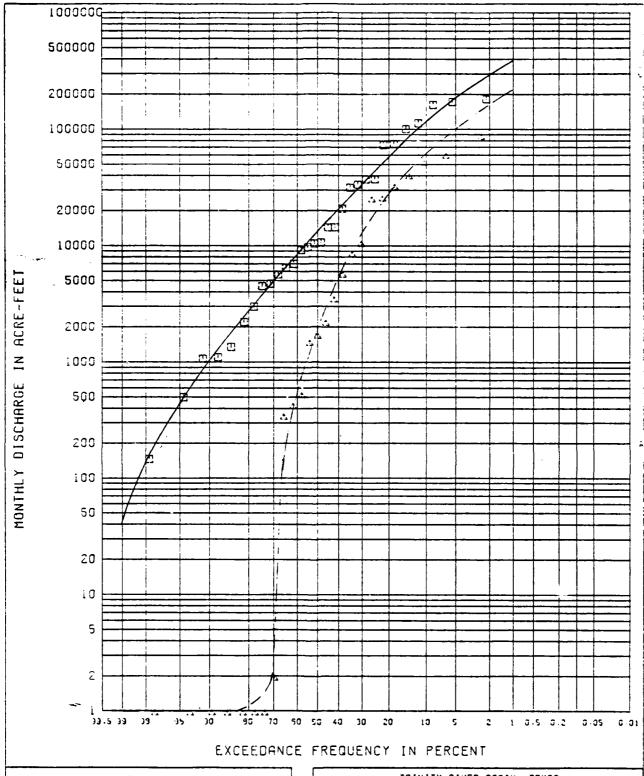
TRINITY RIVER BASIN. TEXAS

LAVON LAKE

DISCHARGE-FREQUENCY RELATIONS AT DAM SITE

JANUARY FLOWS

U.S. ARMY ENGINEER DISTRICT. FORT WORTH TO ACCOMPANY INSTREAM FLOW PROBLEMS AND NEEDS EVALUATION REPORT OF DECEMBER 1980



9 -- 2 PRE-IMPOUNDMENT CONDITIONS
(PERIOD OF RECORD 1924-1953)

— — POST-IMPOUNGMENT CONDITIONS
 (PERIOD OF RECORD 1954-1979)

TRINITY RIVER BASIN. TEXAS

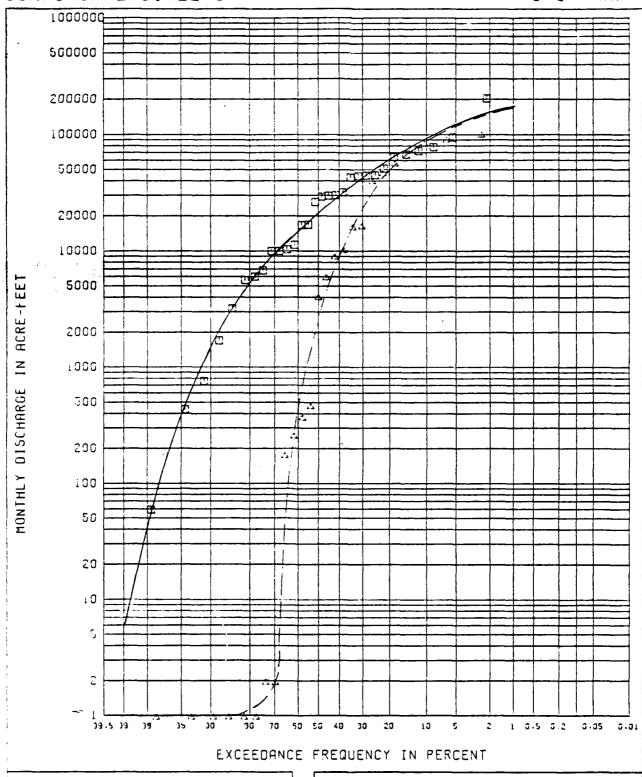
LAVON LAKE

DISCHARGE-FREQUENCY RELATIONS

AT DAM SITE

FEBRUARY FLOWS

U.S. ARMY ENGINEER DISTRICT. FORT WORTH TO ACCOMPANY INSTREAM FLOW PROBLEMS AND NEEDS EVALUATION REPORT OF DECEMBER 1990 PLATE 2



PRE-IMPOUNDMENT CONDITIONS

(PERIOD OF RECORD 1924-1953)

→ → POST-IMPOUNDMENT CONDITIONS (PERIOD OF RECORD 1954-1979)

TRINITY RIVER BASIN, TEXAS

LAVON LAKE

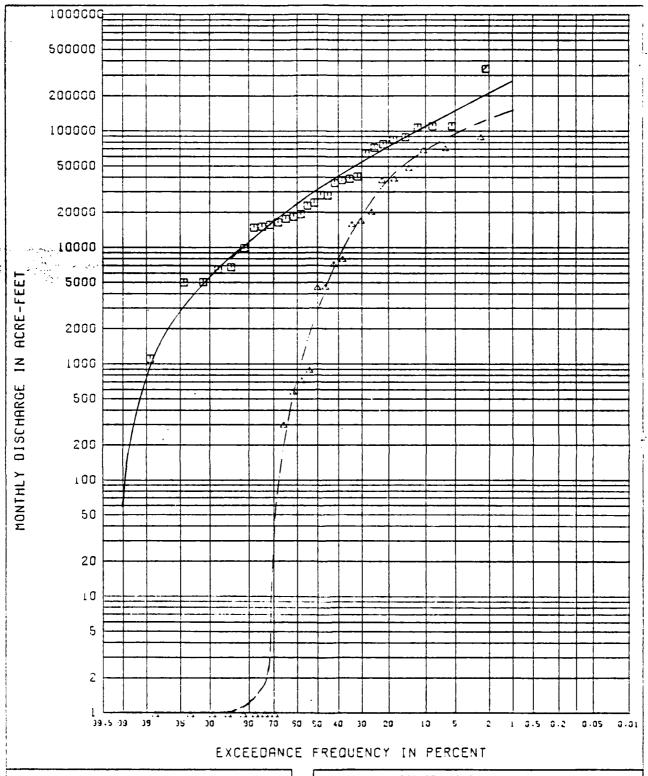
DISCHARGE-FREQUENCY RELATIONS

AT DAM SITE

MARCH FLOWS

U.S. ARMY ENGINEER DISTRICT. FORT WORTH TO ACCOMPANY INSTREAM FLOW PROBLEMS AND NEEDS EVALUATION REPORT OF DECEMBER 1990

PLATE 3



- — — POST-IMPOUNDMENT CONDITIONS (PERIOD OF RECORD 1954-1979) TRINITY RIVER SASIN. TEXAS

LAVON LAKE

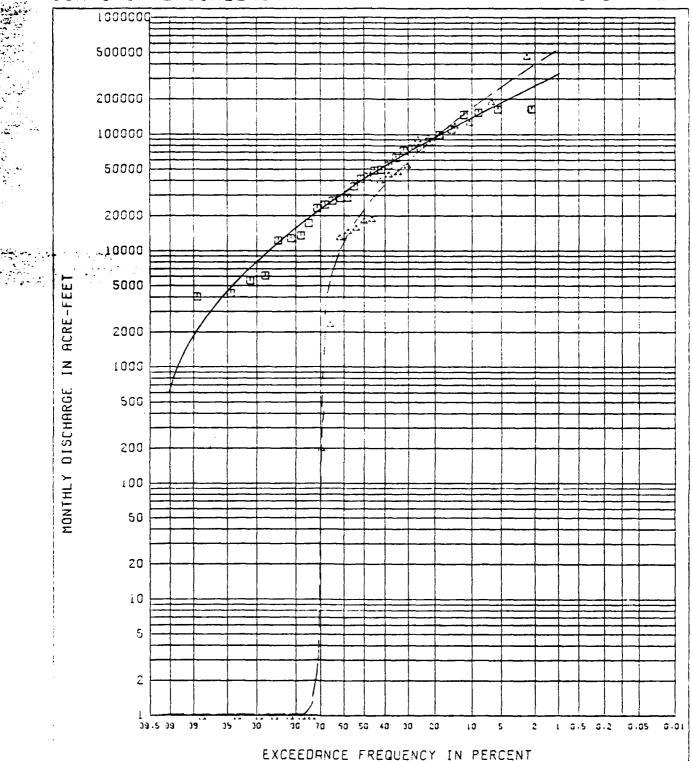
DISCHARGE-FREQUENCY RELATIONS

AT DAM SITE

APRIL FLOWS

U.S. ARMY ENGINEER DISTRICT. FORT WORTH
TO ACCOMPANY INSTREAM FLOW PROBLEMS AND NEEDS
EVALUATION REPORT OF DECEMBER 1980

****PLATE 4***



The state of the s

- - POST-IMPOUNDMENT CONDITIONS
(PERIOD OF RECORD 1954-1979)

TRINITY RIVER BASIN. TEXAS

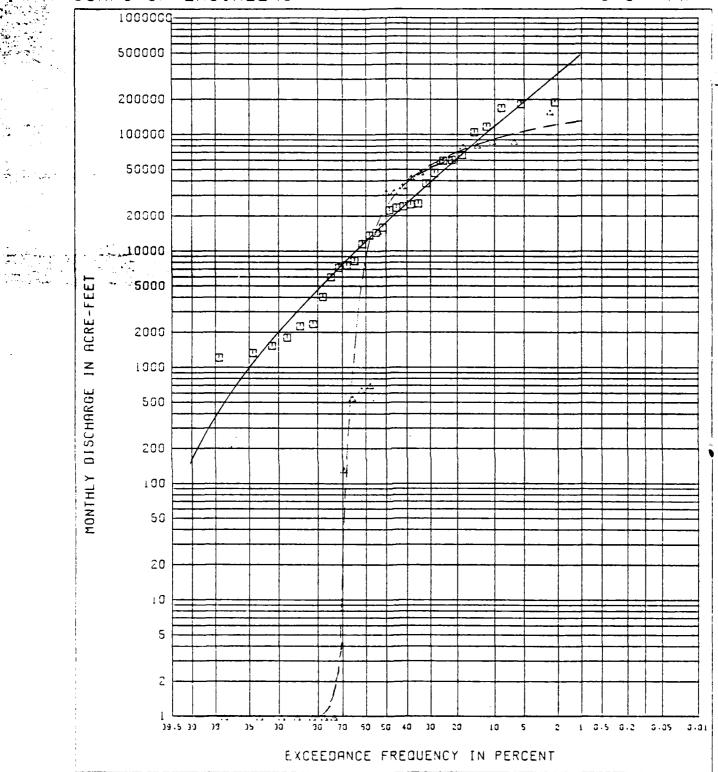
LAVON LAKE

DISCHARGE-FREQUENCY RELATIONS

AT DAM SITE

MAY FLOWS

U.S. ARMY ENGINEER DISTRICT. FORT WORTH
TO ACCOMPANY INSTREAM FLOW PROBLEMS AND MEEDS
EVALUATION REPORT OF DECEMBER 1990
PLATE 5



PRE-IMPOUNCHENT CONDITIONS
(PERIOD OF RECORD 1924-195))

→ → POST-IMPOUNDMENT CONDITIONS

(PERIOD OF RECORD 1954-1979)

TRINITY RIVER BASIN. TEXAS

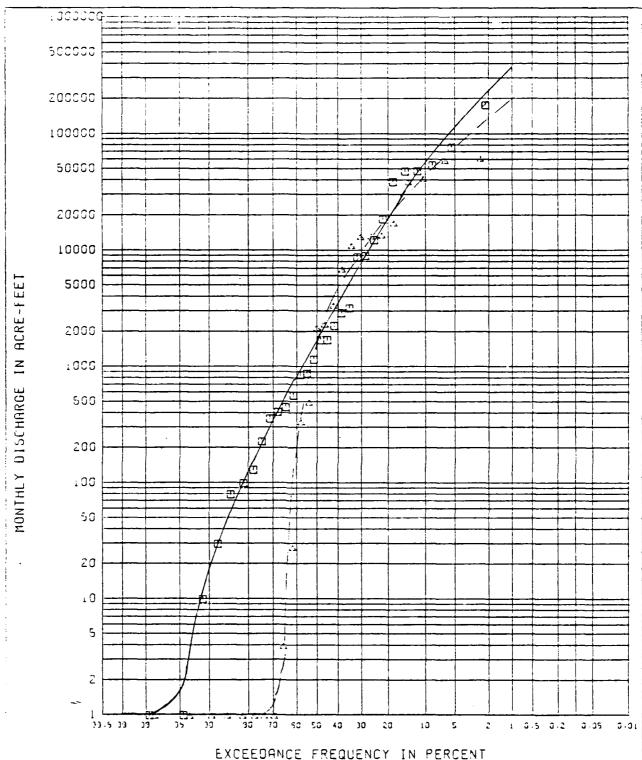
LAVON LAKE

DISCHARGE-FREQUENCY RELATIONS

AT DAM SITE

JUNE FLOWS

U.S. ARMY ENGINEER DISTRICT. FORT WORTH TO ACCOMPANY INSTREAM FLOW PROBLEMS AND NEEDS EVALUATION REPORT OF DECEMBER 1990 PLATE 6



PRE-IMPOUNDMENT CONDITIONS
(PERIOD OF RECORD 1024-1050)

- - - - POST-IMPOUNDMENT CONDITIONS
(PERIOD OF RECORD 1954-1979)

TRINITY RIVER BASIN, TEXAS

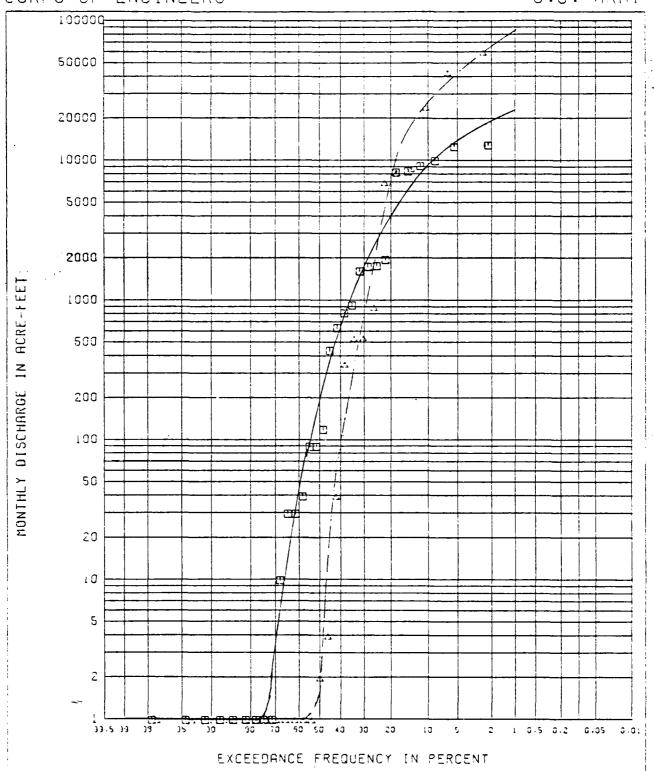
LAVON LAKE

DISCHARGE-FREQUENCY RELATIONS

AT DAM SITE

JULY FLOWS

U.S. ARMY ENGINEER DISTRICT. FORT WORTH
TO ACCOMPANY INSTREAM FLOW PROBLEMS AND NEEDS
EVALUATION REPORT OF DECEMBER 1380
PLATE 7



만 PRE-IMPOUNDMENT CONDITIONS (PERIOD OF PECORO 1024-1353)

-A POST-IMPOUNDMENT CONCITIONS (PERIOD OF RECORD 1354-1979)

TRINITY RIVER BASIN, TEXAS

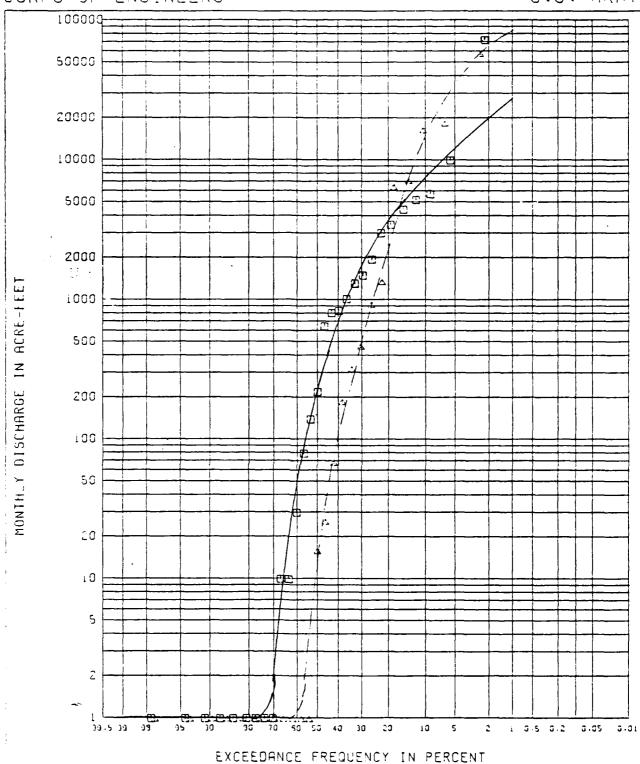
LAVON LAKE

DISCHARGE-FREQUENCY RELATIONS

AT DAM SITE

AUGUST FLOWS

U.S. ARMY ENGINEER DISTRICT. FORT WORTH TO ACCOMPANY INSTREAM FLOW PROBLEMS AND NEEDS EVALUATION REPORT OF DECEMBER 1990



PRE-IMPOUNDMENT CONDITIONS
(PERIOD OF RECORD 1924-1953)

- - - POST-IMPOUNDMENT CONDITIONS (PERIOD OF RECORD 1954-1979)

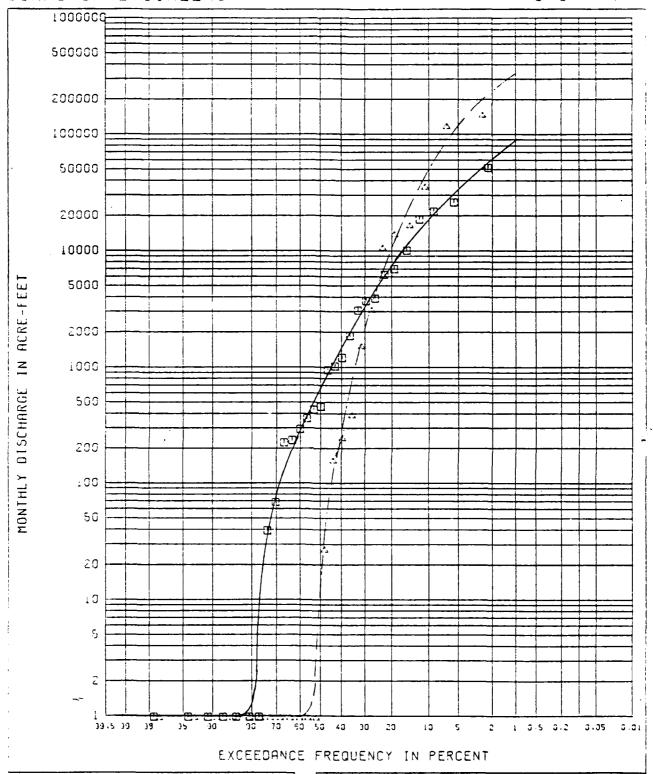
TRINITY RIVER BASIN, TEXAS

LAVON LAKE

DISCHARGE-FREQUENCY RELATIONS
AT DAM SITE

SEPTEMBER FLOWS

U.S. ARMY ENGINEER DISTRICT, FORT WORTH TO ACCOMPANY INSTREAM FLOH PROBLEMS AND NEEDS EVALUATION REPORT OF DECEMBER 1980 PLATE 9



PRE-IMPOUNDMENT CONDITIONS

(PERIOD OF RECORD 1924-1953)

POST-IMPOUNDMENT CONDITIÓNS (PERIOD OF RECORD 1954-1978)

TRINITY RIVER BASIN. TEXAS

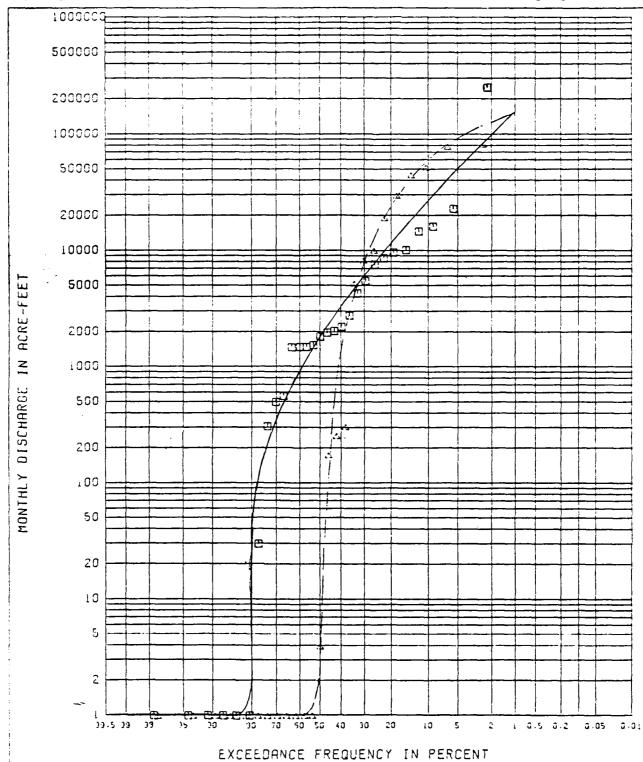
LAVON LAKE

DISCHARGE-FREQUENCY RELATIONS

AT DAM SITE

OCTOBER FLOWS

U.S. ARMY ENGINEER DISTRICT, FORT WORTH TO ACCOMPANY INSTREAM FLOW PROBLEMS AND NEEDS EVALUATION REPORT OF DECEMBER 1990 PLATE 10



The state of the s

— → POST-IMPOUNDMENT CONDITIONS (PERIOD OF RECORD 1954-1978) TRINITY RIVER BASIN. TEXAS

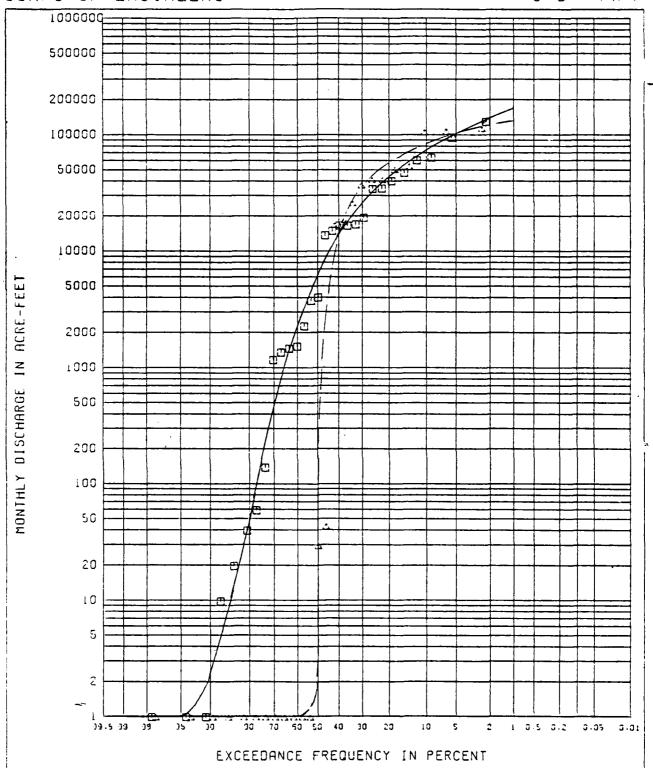
LAVON LAKE

DISCHARGE-FREQUENCY RELATIONS

AT DAM SITE

NOVEMBER FLOWS

U.S. ARMY ENGINEER DISTRICT. FORT WORTH
TO ACCOMPANY INSTREAM FLOW PROBLEMS AND NEEDS
EVALUATION REPORT OF DECEMBER 1990
PLATE 11



PRE-IMPOUNDMENT CONDITIONS

(PERIOD OF RECORD 1924-1953)

- - - POST-IMPOUNDMENT COMMITTIONS
(PERIOD OF RECORD 1954-1978)

TRINITY RIVER BASIN, TEXAS

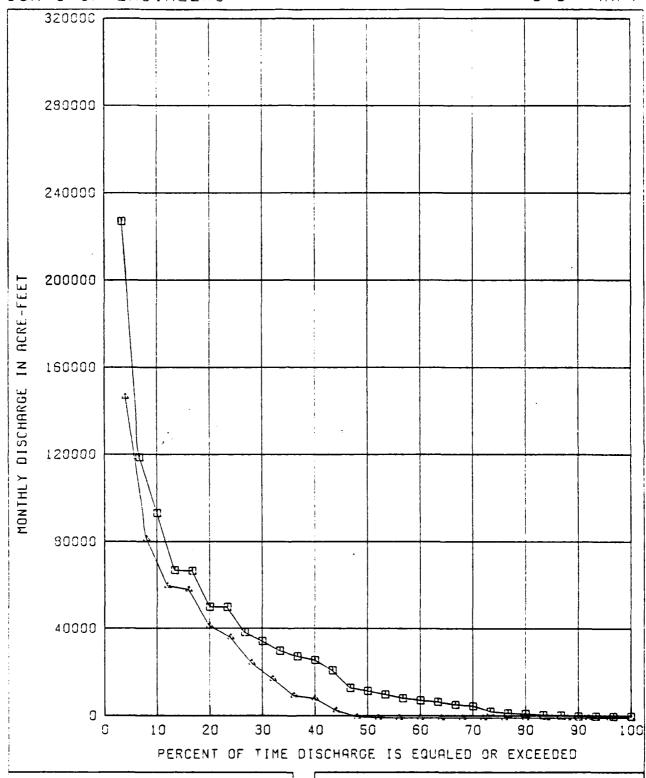
LAVON LAKE

DISCHARGE-FREQUENCY RELATIONS

AT DAM SITE

DECEMBER FLOWS

U.S. ARMY ENGINEER DISTRICT. FORT WORTH
TO ACCOMPANY INSTREAM FLOW PROBLEMS AND NEEDS
EVALUATION REPORT OF DECEMBER 1990
PLATE 12



PRE-IMPOUNDMENT CONDITIONS

(PERIOD OF RECORD 1924-1953)

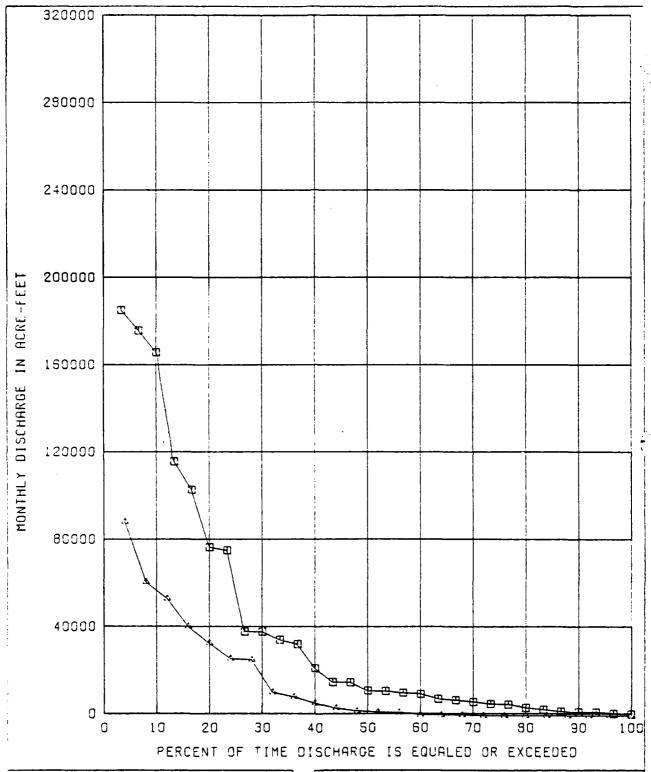
POST-IMPOUNDMENT CONDITIONS (PERIOD OF RECORD 1954-1979)

TRINITY RIVER BASIN. TEXAS LAVON LAKE

FLOW DURATION CURVES AT DAM SITE JANUARY FLOWS

U.S. ARMY ENGINEER DISTRICT, FORT HORTH TO ACCOMPANY INSTREAM FLOH PROBLEMS AND NEEDS EVALUATION REPORT OF DECEMBER 1980

PLATE 13



The Pre-impoundment conditions (Period of Record 1924-1953)

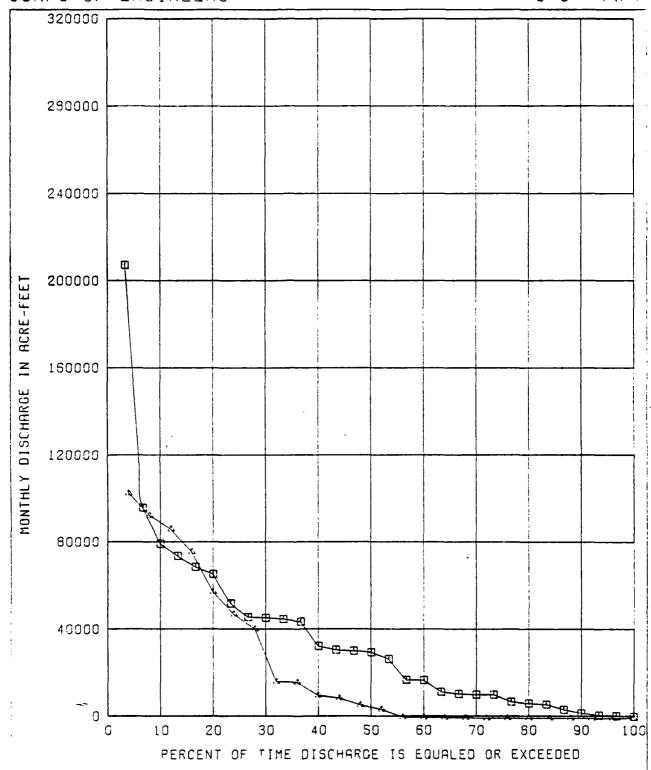
POST-IMPOUNDMENT CONDITIONS
(PERIOD OF RECORD 1954-1979)

TRINITY RIVER BASIN. TEXAS

FLOW DURATION CURVES AT DAM SITE FEBRUARY FLOWS

U.S. ARMY ENGINEER DISTRICT, FORT WORTH TO ACCOMPANY INSTREAM FLOW PROBLEMS AND NEEDS EVALUATION REPORT OF DECEMBER 1980

PLATE 14



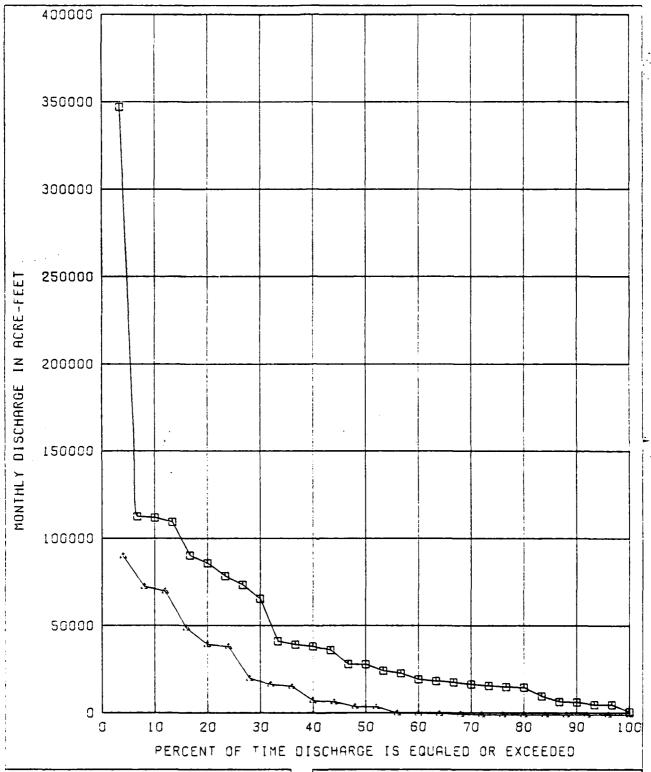
PRE-IMPGUNDMENT CONDITIONS
(PERIOD OF RECORD 1924-1953)

POST-IMPOUNDMENT CONDITIONS
(PERIOD OF RECORD 1954-1979)

TRINITY RIVER BASIN. TEXAS

FLOW DURATION CURVES AT DAM SITE MARCH FLOWS

U.S. ARMY ENGINEER DISTRICT, FORT WORTH TO ACCOMPANY INSTREAM FLOH PROBLEMS AND NEEDS EVALUATION REPORT OF DECEMBER 1390 PLATE 15



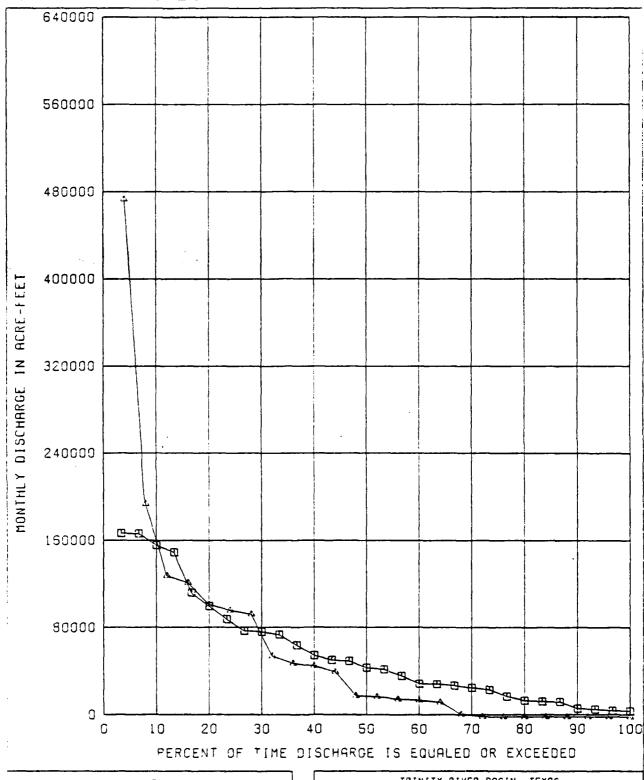


POST-IMPOUNDMENT CONDITIONS (PERIOD OF RECORD 1954-1979)

TRINITY RIVER BASIN. TEXAS
LAVON LAKE

FLOW DURATION CURVES AT DAM SITE APRIL FLOWS

U.S. ARMY ENGINEER DISTRICT. FORT WORTH TO ACCOMPANY INSTREAM FLOW PROBLEMS AND NEEDS EVALUATION REPORT OF DECEMBER 1990



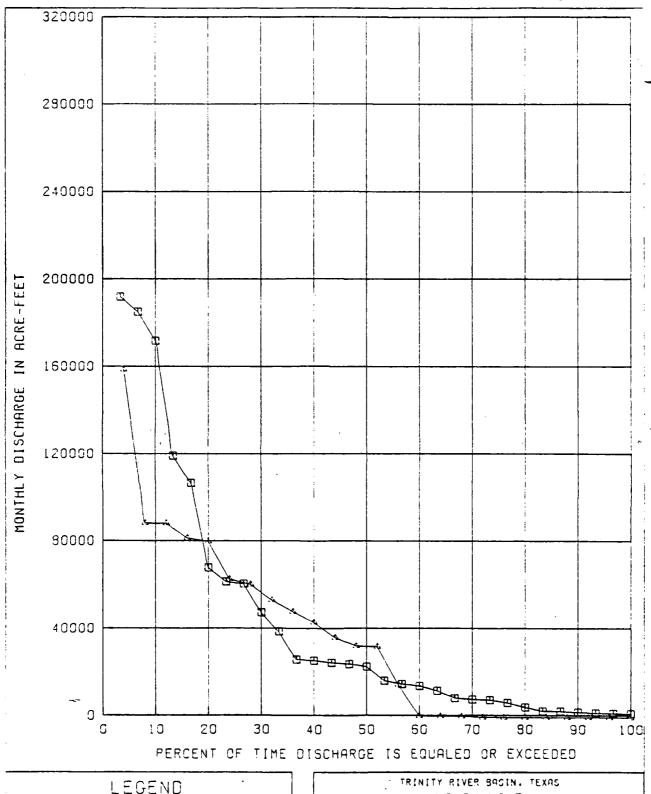
TPE-IMPOUNDMENT CONDITIONS
(PERIOD OF RECORD 1924-1953)

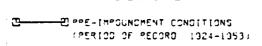
POST-IMPOUNDMENT CONDITIONS (PERIOD OF RECORD 1954-1979)

TRINITY RIVER BASIN. TEXAS
LAVON LAKE

FLOW DURATION CURVES AT DAM SITE MAY FLOWS

U.S. ARMY ENGINEER DISTRICT, FORT WORTH
TO ACCOMPANY INSTREM FLOW PROBLEMS AND NEEDS
EVALUATION REPORT OF DECEMBER 1980
PLATE 17



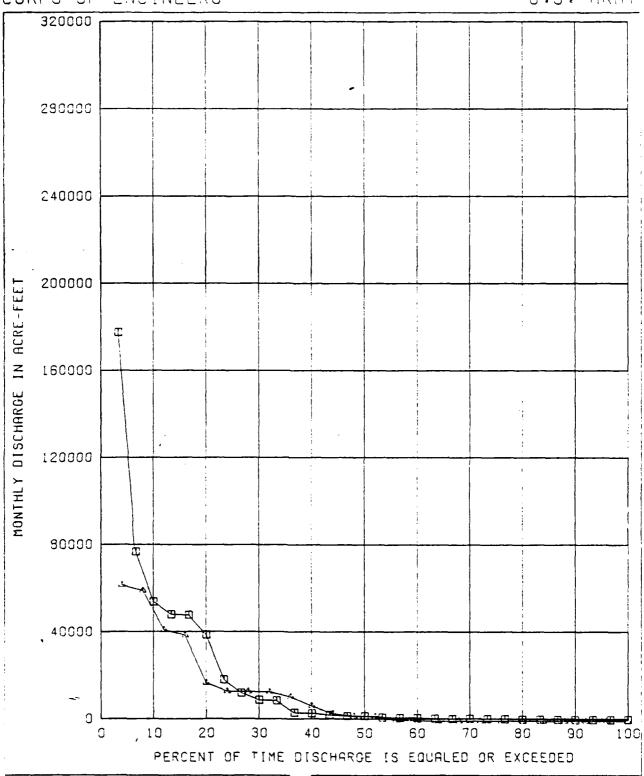


A POST-IMPOUNGMENT CONDITIONS (PERIOD OF RECORD 1054-1079) TRINITY RIVER BASIN. TEXAS LAVON LAKE

FLOW DURATION CURVES AT DAM SITE

JUNE FLOWS

U.S. ARMY ENGINEER DISTRICT, FORT WORTH TO ACCOMPANY INSTREAM FLOW PROBLEMS AND NEEDS EVALUATION REPORT OF DECEMBER 1390 PLATE 18



The Period of Record 1924-1953)

POST-IMPOUNDMENT CONDITIONS

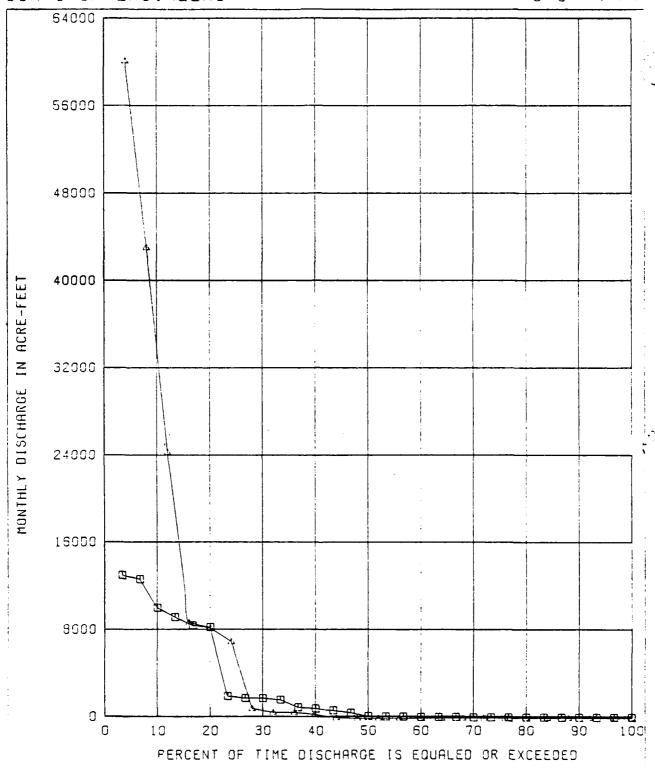
(PERIOD OF RECORD 1954-1979)

TRINITY RIVER BASIN. TEXAS
LAVON LAKE

FLOW DURATION CURVES AT DAM SITE JULY FLOWS

U.S. ARMY ENGINEER DISTRICT, FORT WORTH TO ACCOMPANY INSTREAM FLOW PROBLEMS AND NEEDS EVALUATION REPORT OF DECEMBER 1980

PLATE 19



LECEND

PRE-IMPOUNDMENT CONDITIONS

(PERIOD OF RECORD 1024-1053)

POST-IMPOUNDMENT CONDITIONS (PERIOD OF RECORD 1954-1979)

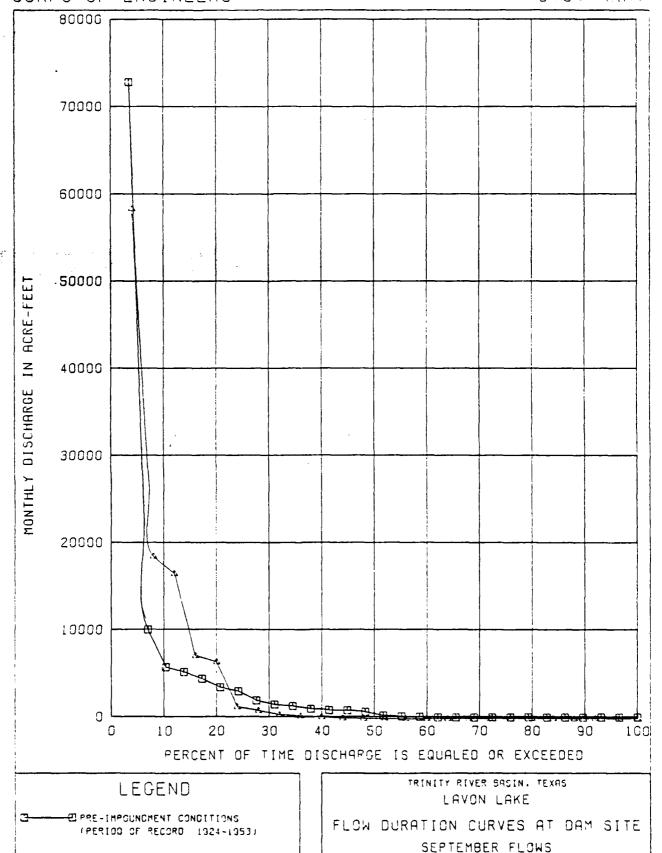
TRINITY RIVER BASIN. TEXAS
LAVON LAKE

FLOW DURATION CURVES AT DAM SITE AUGUST FLOWS

U.S. ARMY ENGINEER DISTRICT. FORT WORTH
TO ACCOMPANY INSTREAM FLOW PROBLEMS AND NEEDS
EVALUATION REPORT OF DECEMBER 1330
PLATE 20

A POST-IMPOUNDMENT CONDITIONS

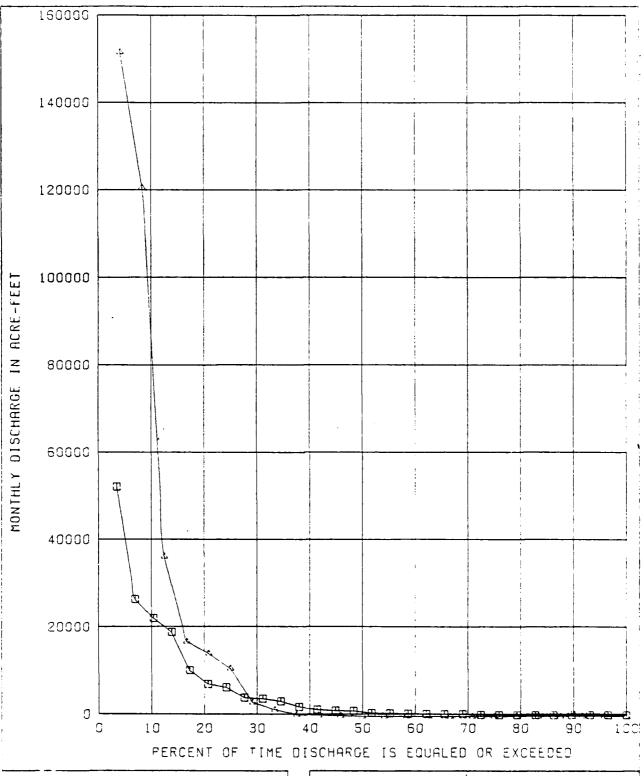
(PERIOD OF RECORD 1954~1979)

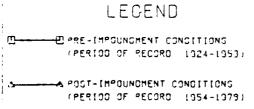


U.S. ARMY ENGINEER DISTRICT, FORT WORTH

- PLATE 21

TO ACCOMPANY INSTREAM FLOW PROBLEMS AND NEEDS EVALUATION REPORT OF DECEMBER 1990



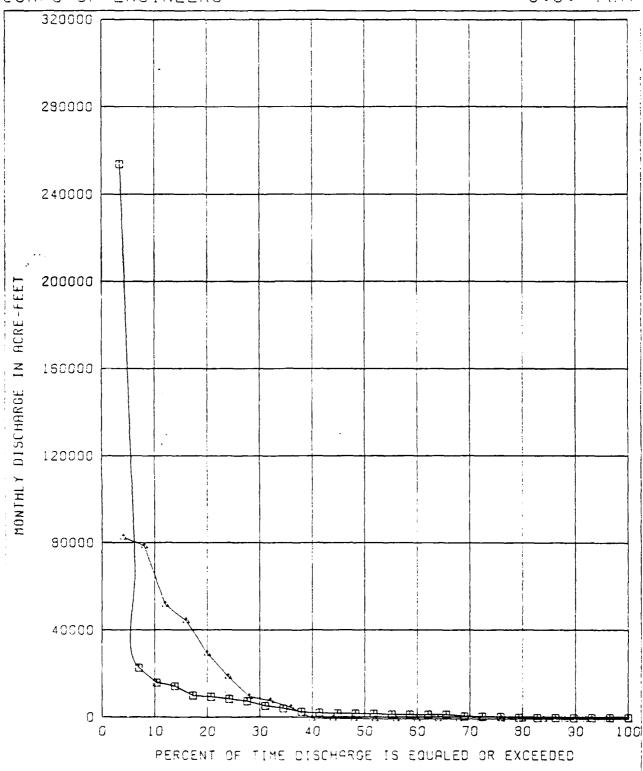


TRINITY RIVER BASIN. TEXAS
LAVON LAKE

FLOW DURATION CURVES AT DAM SITE OCTOBER FLOWS

U.S. ARMY ENGINEER DISTRICT, FORT WORTH TO ACCOMPANY INSTREAM FLOW PROBLEMS AND NEEDS EVALUATION REPORT OF DECEMBER 1990

PLATE 22

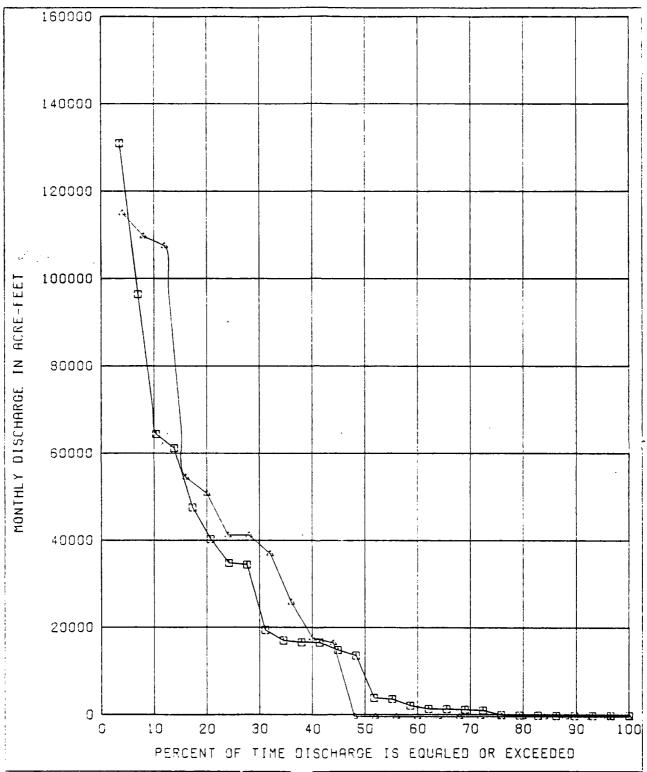


ED PRE-IMPOUNDMENT CONDITIONS (PERIOD OF "ECORO 1924-1953)

A POST-IMPOUNDMENT CONDITIONS (PERIOD OF RECORD 1054-1079) TRINITY RIVER BASIN. TEXAS LAVON LAKE

FLOW BURATION CURVES AT DAM SITE NOVEMBER FLOWS

U.S. ARMY ENGINEER DISTRICT, FORT WORTH TO ASCOMPANY INSTREAM FLOW PROBLETS AND NEEDS EVALUATION REPORT OF DECEMBER 1390 PLATE 23



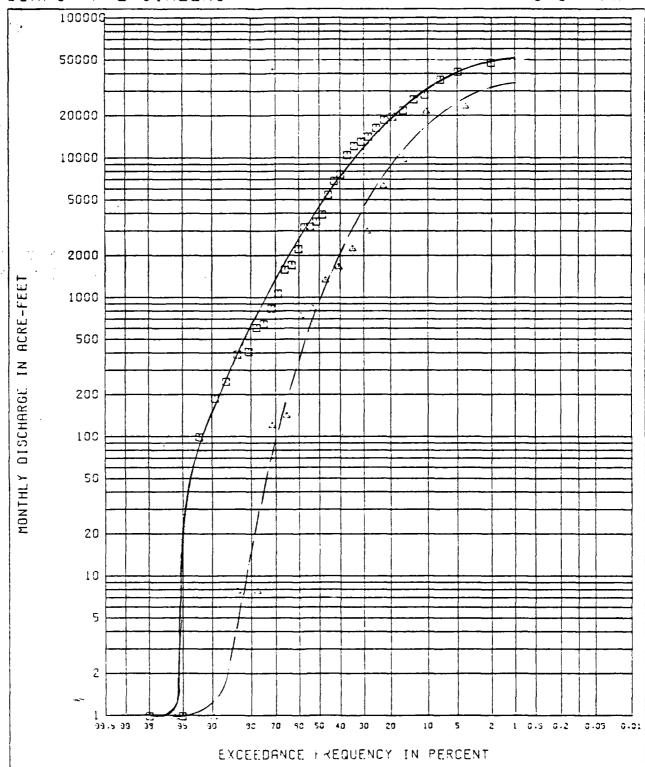
The state of the s

POST-IMPOUNDMENT CONCITIONS
(PERIOD OF RECORD 1354-1979)

TRINITY RIVER BASIN. TEXAS

FLOW DURATION CURVES AT DAM SITE DECEMBER FLOWS

U.S. ARMY ENGINEER DISTRICT. FORT WORTH TO ACCOMPANY INSTREAM FLOW PROBLEMS AND NEEDS EVALUATION REPORT OF DECEMBER 1390



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EPPRE-IMPOUNDMENT CONDITIONS

(PERIOD OF SECOND 1924-1957)

- - -> POST-IMPOUNDMENT CONDITIONS
(PERIOD OF RECORD 1993-1979)

TRINITY RIVER BASIN. EXAS

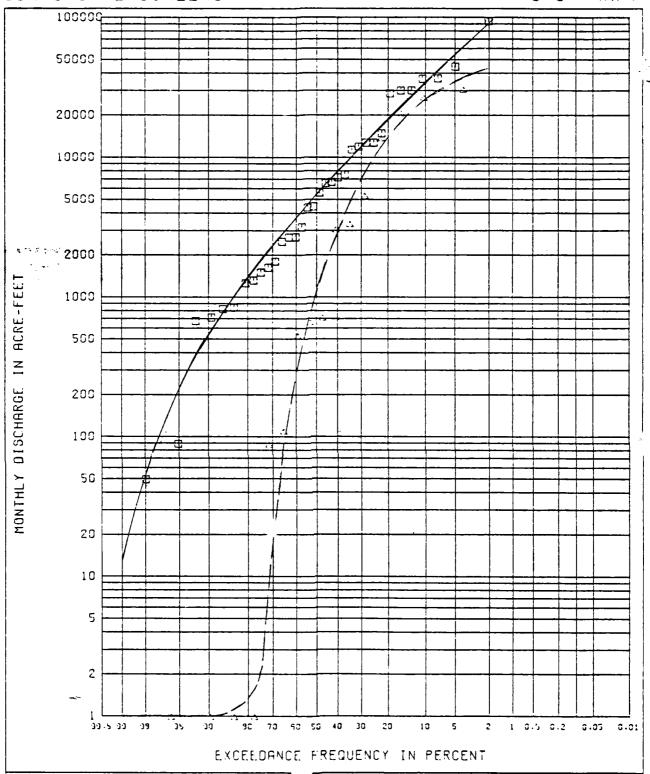
NAVARRO MILLS LAKE

DISCHARGE-FREQUENCY RELATIONS

AT DAM SITE

JANUARY FLOWS

U.S. ARMY ENGINEER DISTRICT, FORT WORTH
TO ACCOMPANY INSTREAM FLOW PROBLEMS AND NEEDS
EVALUATION REPORT OF DECEMBER 1990
PLATE 1



LECEND

PRE-IMPOUNDMENT CONDITIONS (PERIOD OF RECORD 1024-1057)

- - - POST-IMPOUNDMENT CONDITIONS (PERIOD OF RECORD 1053-1979)

TRINITY RIVER BOSIN, TEXAS

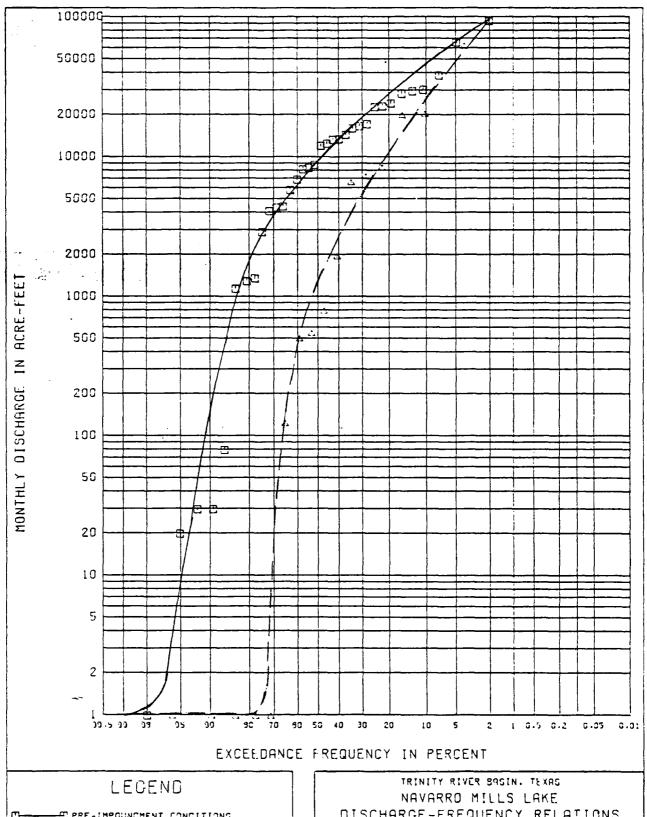
NAVARRO MILLS LAKE

DISCHARGE-FREQUENCY RELATIONS

AT DAM SITE

FEBRUARY FLOWS

U.S. GRMY ENGINEER DISTRICT, FORT WORTH TO ASCOMPANY INSTREMM FLOH PROBLEMS AND NEEDS EVALUATION REPORT OF DECEMBER 1990

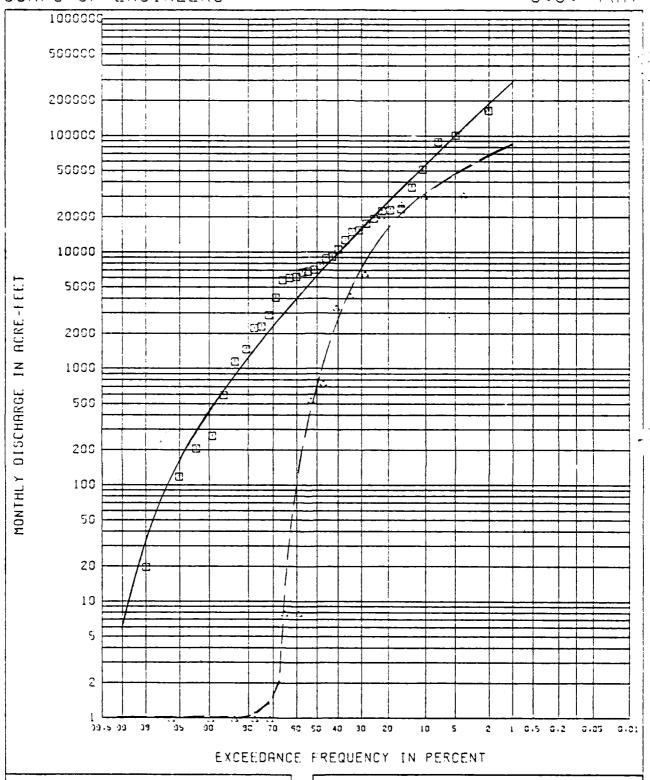


-C PRE-IMPOUNDMENT CONDITIONS (PERIOD OF RECORD 1924-1957)

> -A POST-IMPOUNCHENT CONCITIÓNS (PERIOD OF RECORD 1963-1978)

DISCHARGE-FREQUENCY RELATIONS AT DAM SITE MARCH FLOWS

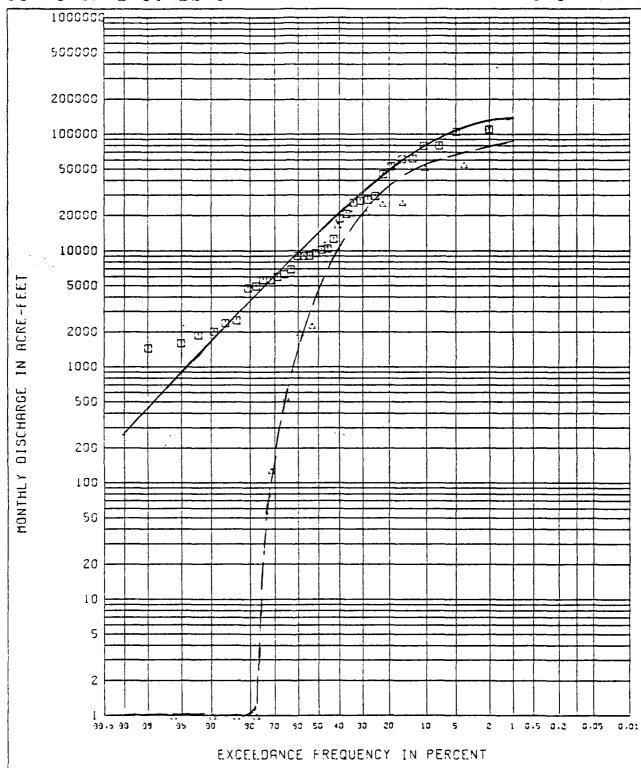
U.S. ARMY ENGINEER DISTRICT. FORT WORTH TO ACCOMPANY INSTREMM FLOW PROBLEMS AND NEEDS EVALUATION REPORT OF DECEMBER 1990 PLATE 3



LECEND

9 -- E PRE-IMPOUNDMENT CONDITIONS
(PERIOD OF RECORD 1024-1057)

 TRINITY RIVER BOSIN, TEXAS
NAVARRO MILLS LAKE
DISCHARGE-FREQUENCY RELATIONS
AT DAM SITE
APRIL FLOWS



© PRE-IMPOUNDMENT CONDITIONS
(PERIOD OF RECORD 1024-1057)

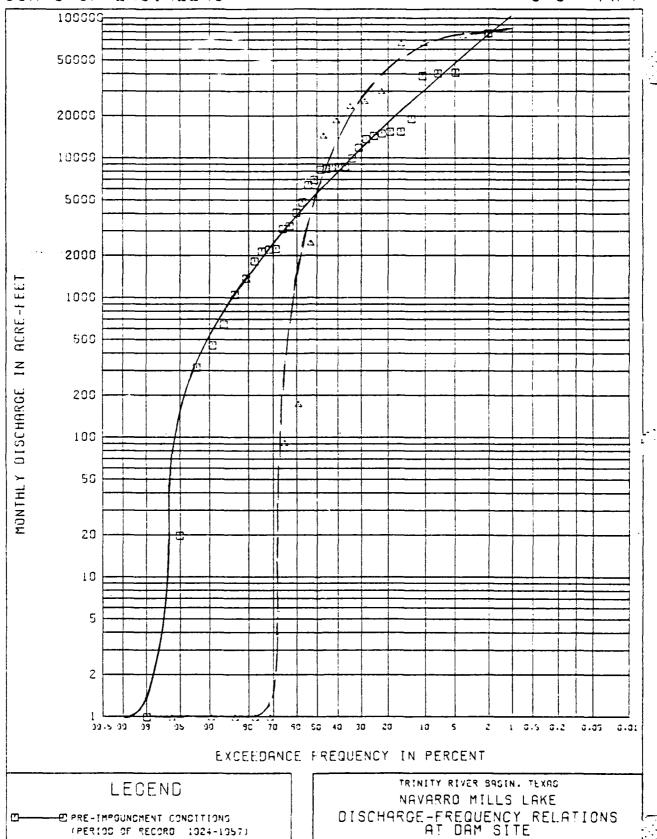
 TRINITY RIVER BOSIN. TEXAS
NAVARRO MILLS LAKE
DISCHARGE-FREQUENCY RELATIONS
AT DAM SITE
MAY FLOWS

U.S. ARMY ENGINEER DISTRICT. FORT WORTH TO ACCOMPANY INSTREAM FLOW PROBLEMS AND NEEDS EVALUATION REPORT OF DECEMBER 1980

PLATE 5

-& POST-IMPOUNDMENT CONDITIONS

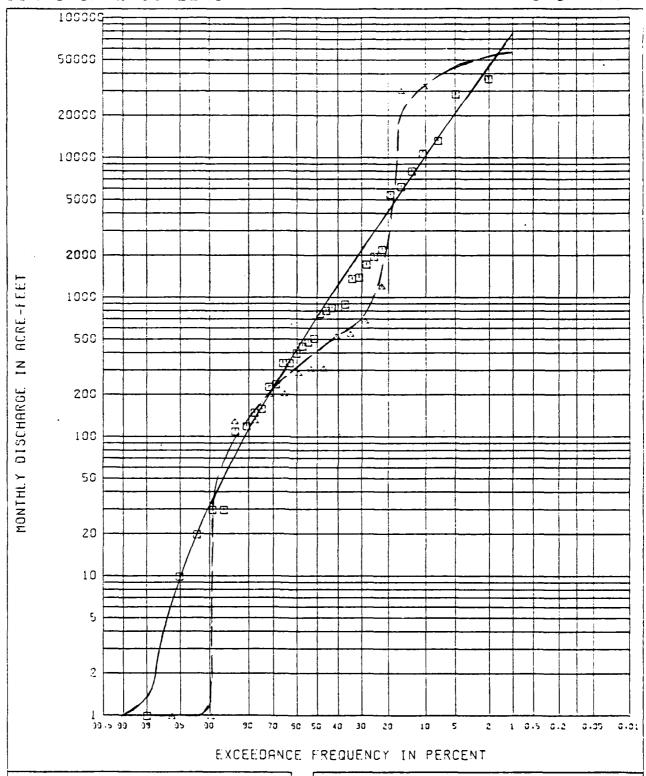
TPERIOD OF RECORD 1053-1079;



TO GCCCMPGNY INSTREGM FLOW PROBLEMS AND NEEDS EVALUATION REPORT OF DECEMBER 1995

U.S. ARMY ENGINEER DISTRICT. FORT WORTH

JUNE FLOWS



PRE-IMPOUNDMENT CONDITIONS
(PERIOD OF RECORD 1924-1997)

- -- POST-IMPOUNCHENT CONCITIONS (PERIOD OF RECORD 1993-1979)

TRINITY RIVER BASIN, TEXAS

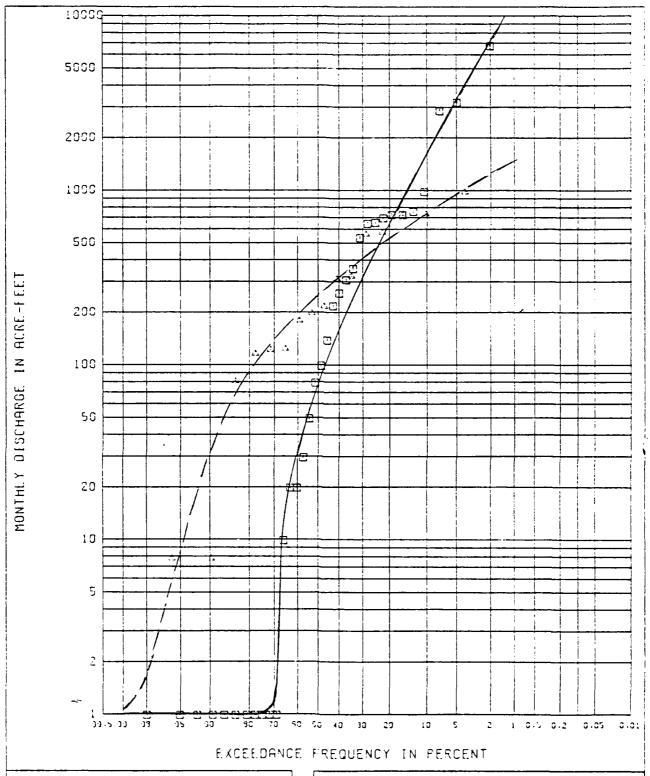
NAVARRO MILLS LAKE

DISCHARGE-FREQUENCY RELATIONS

AT DAM SITE

JULY FLOWS

U.S. ARMY ENGINEER DISTRICT. FORT WORTH
TO ASCOMPANY INSTREM FLOW PROBLEMS AND NEEDS
EVALUATION REPORT OF DECEMBER 1990
PLATE 7



☐ PRE-IMPOUNDMENT CONCITIONS

(PERIOD OF RECORD 1024-1057)

- - -- POST-IMPOUNDMENT CONDITIONS
(PERIOD OF RECORD 1963-1979)

TRINITY RIVER BOSIN, TEXAS

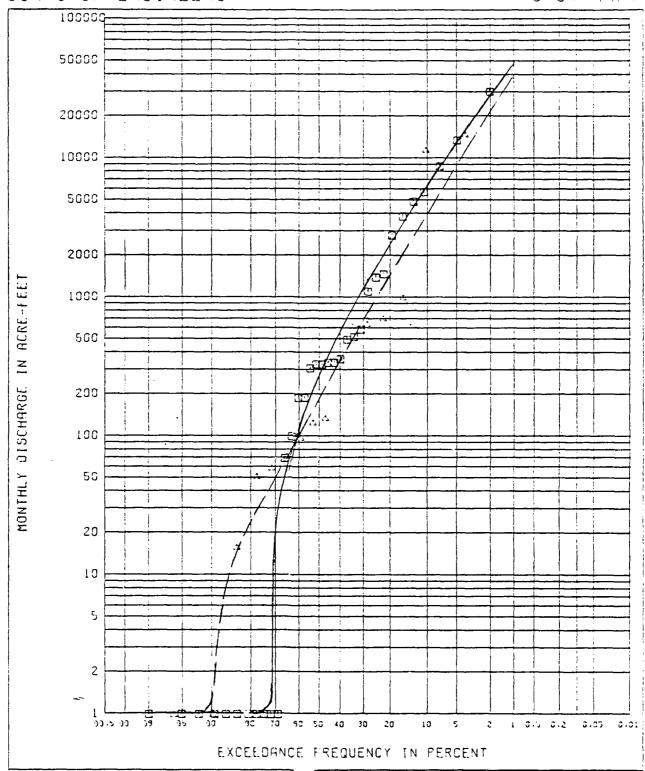
NAVARRO MILLS LAKE

DISCHARGE-FREQUENCY RELATIONS

AT DAM SITE

AUGUST FLOWS

U.S. ARMY ENGINEER DISTRICT. FORT WORTH
TO ACCOMPANY INSTREAM FLOW PROBLEMS AND NEEDS
EVALUATION REPORT OF DECEMBER 1990
PLATE 8



The state of the s

 — — POST-IMPOUNDMENT CONDITIONS (PERIOD OF RECORD 1953-1979) TRINITY RIVER SASIN. TEXAS

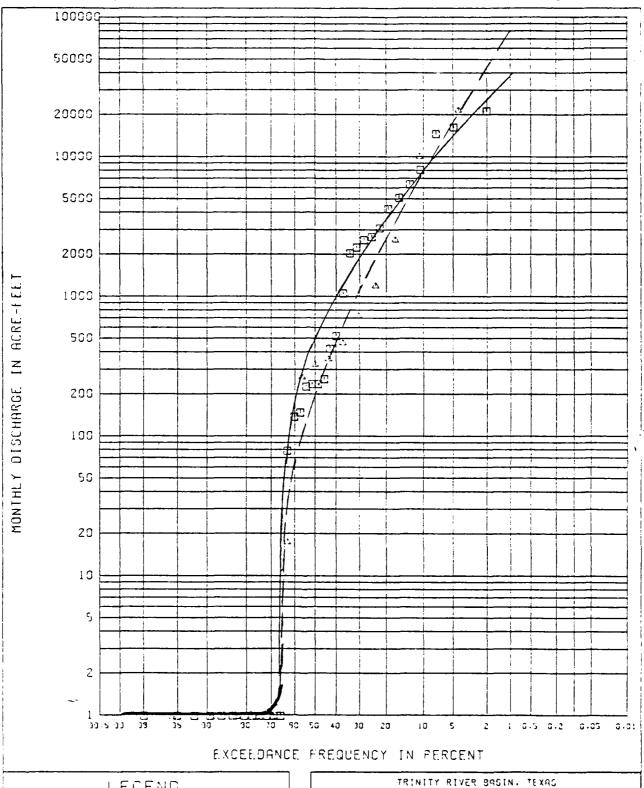
NAVARRO MILLS LAKE

DISCHARGE-FREQUENCY RELATIONS

AT DAM SITE

SEPTEMBER FLOWS

U.S. ARMY ENGINEER DISTRICT. FORT WORTH
TO RECEMPANY INSTREAM FLOW PROBLEMS AND NEEDS
EVALUATION REPORT OF DECEMBER 1990
PLATE 9

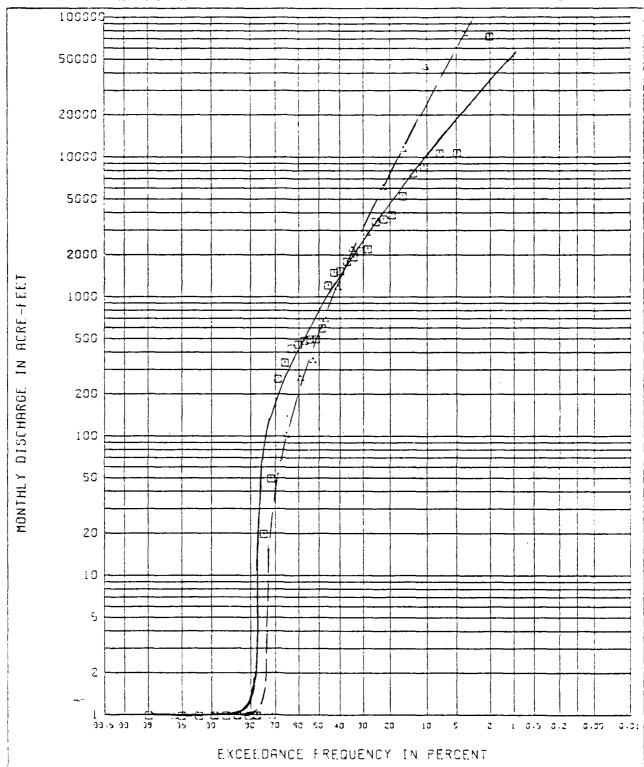


-E PRE-IMPOUNDMENT CONDITIONS (PERIOD OF RECORD 1324-1957)

-A POST-IMPOUNDMENT CONDITIONS (PERIOD OF RECORD 1953~1979)

NAVARRO MILLS LAKE DISCHARGE-FREQUENCY RELATIONS AT DAM SITE OCTOBER FLOWS

U.S. ARMY ENGINEER DISTRICT. FORT WORTH TO GOCOMPANY INSTREAM FLOW PROBLEMS AND NEEDS EVALUATION REPORT OF DECEMBER 1390 PLATE 10



PRE-IMPOUNDMENT CONDITIONS

(PERIOD OF RECORD 1024-1057)

 TRINITY RIVER BASIN, TEXAS

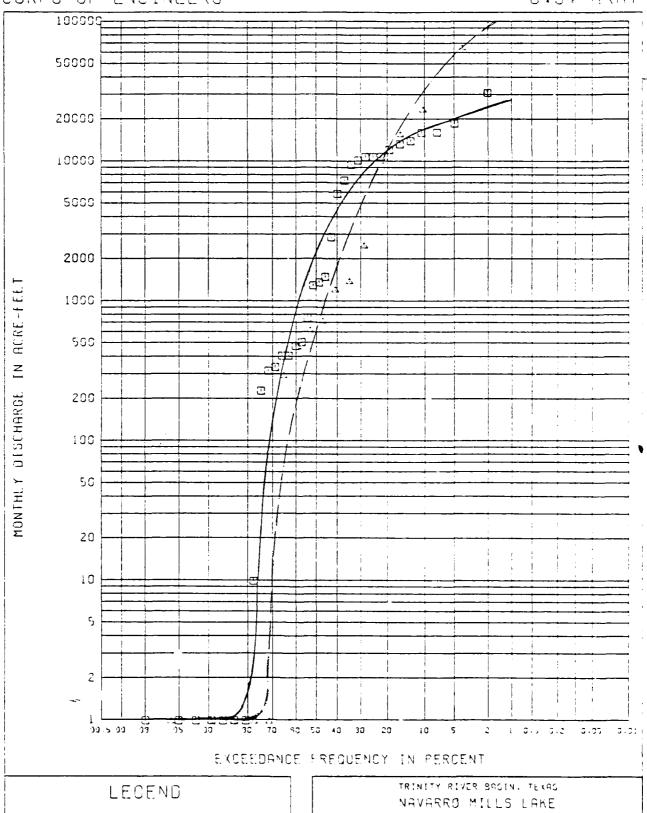
NAVARRO MILLS LAKE

DISCHARGE - FREQUENCY RELATIONS

AT DAM SITE

NOVEMBER FLOWS

U.S. ARMY ENGINEER DISTRICT. FORT WORTH
TO ACCOMPANY INSTREAM FLOW PROBLEMS AND NEEDS
EVALUATION REPORT OF DECLMBER 1390
PLATE 11



PRE-IMPOUNDMENT CONSTITUNS
(PERIOD OF RECORD 1024-1057)

— — —A POST-IMPOUNDMENT CONDITIONS (PERIOD OF RECORD (1053-1079)) TRINITY RIVER BASIN, TEXAS

NAVARRO MILLS LAKE

DISCHARGE - PREQUENCY RELATIONS

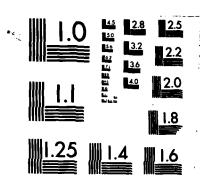
AT DAM SITE

DECEMBER FLOWS

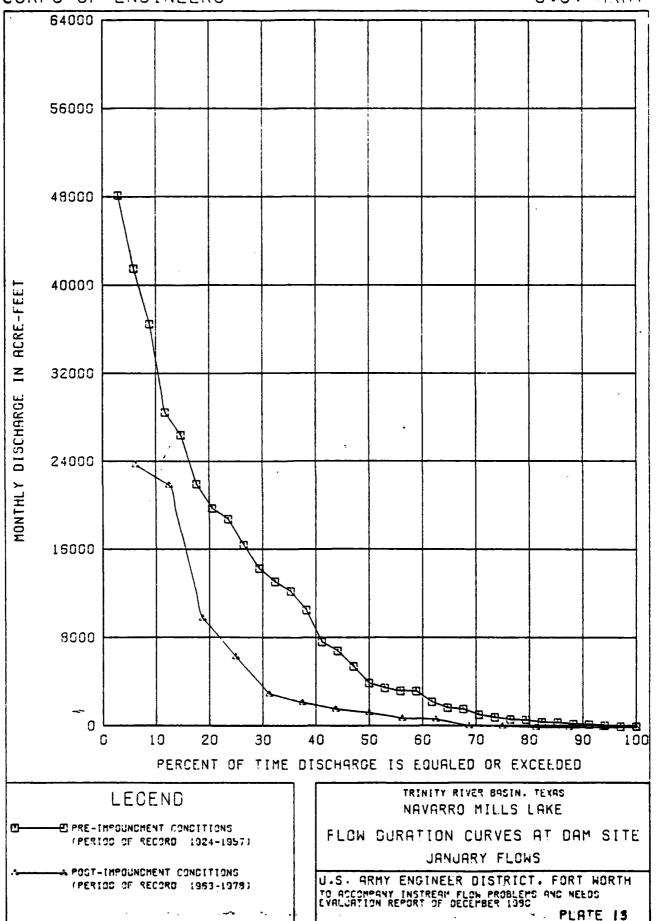
U.S. ARMY ENGINEER DISTRICT, FORT WORTH TO ASCOMPANY INSTREAM FLOW PROBLEMS AND NEEDS EVALUATION REPORT OF DECEMBER 1590

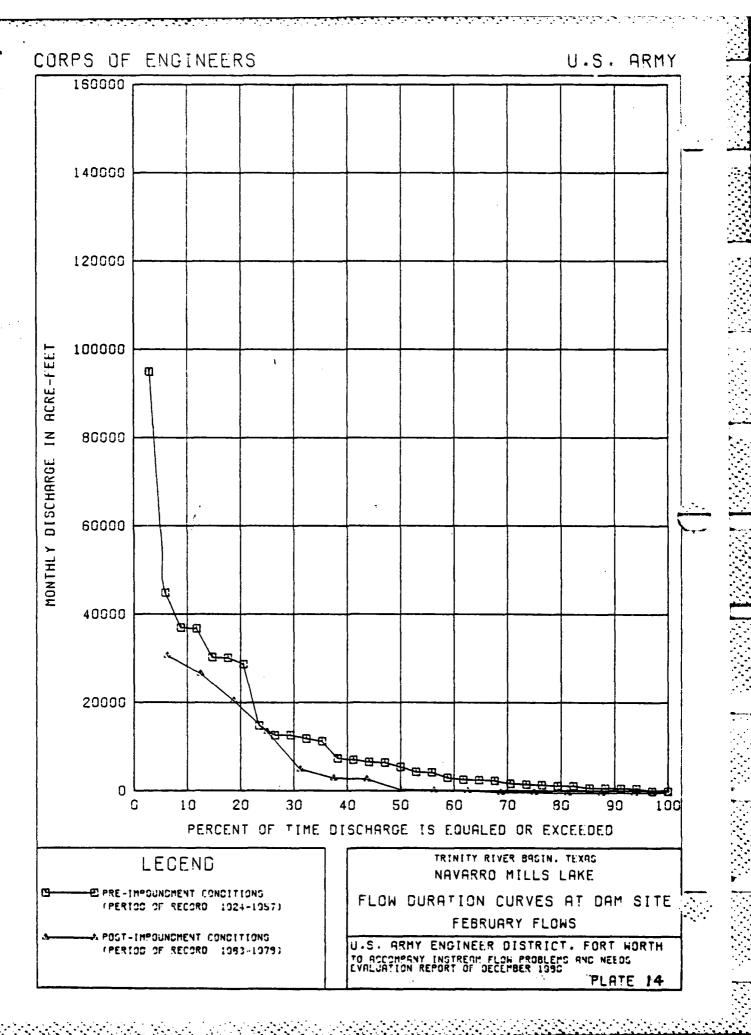
FLATE 12

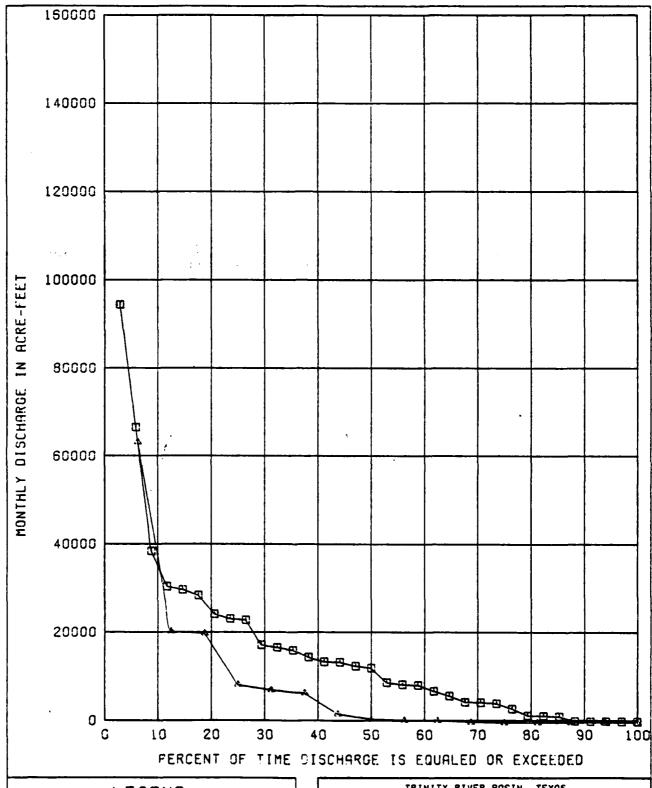
RESERVOIR CONTROL CENTER: ACTIVITIES AND ACCOMPLISHMENTS OF THE SOUTHWEST. (U) CORPS OF ENGINEERS DALLAS TX SOUTHWESTERN DIV JAN 81_ AD-R156 497 F/G 13/2 UNCLASSIFIED NL



MICROCOPY RESOLUTION TEST CHART NATIONAL BUREAU OF STANDARDS-1963-A







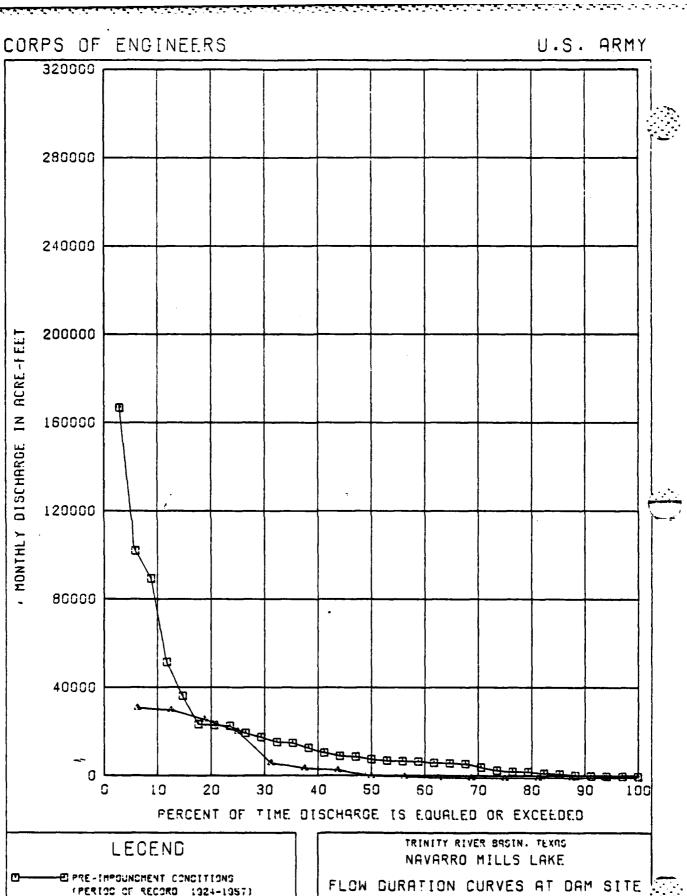
(PERIOS OF RECORD 1924-1957)

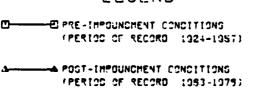
POST-EMPOUNDMENT CONDITE NS
(PERIOD OF RECORD 1983-1979)

TRINITY RIVER BASIN. TEXAS NAVARRO MILLS LAKE

FLOW DURATION CURVES AT DAM SITE MARCH FLOWS

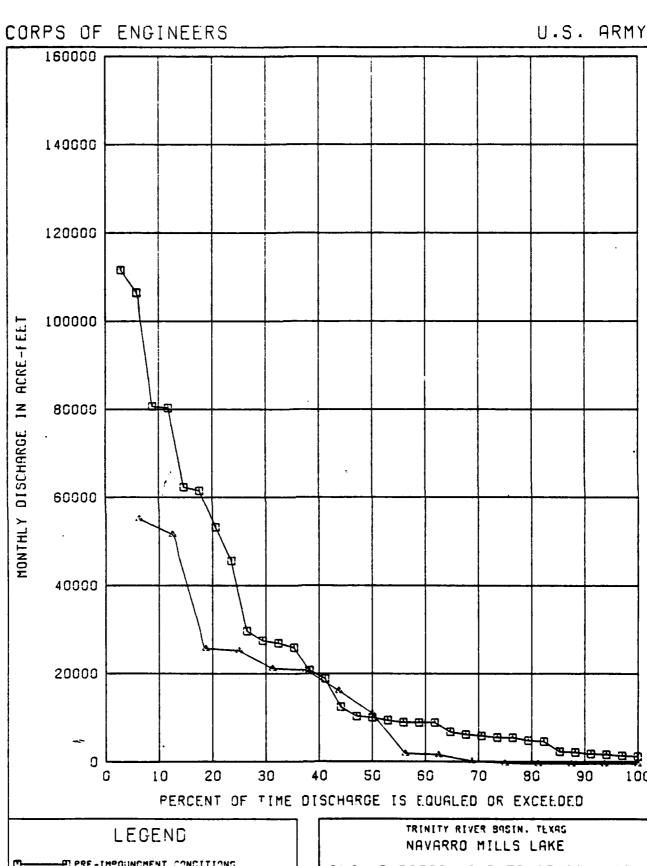
U.S. ARMY ENGINEER DISTRICT, FORT WORTH
TO RECOMPANY INSTREAM FLOW PROBLEMS AND NEEDS
EVALUATION REPORT OF DECEMBER 1980
PLOTE 15

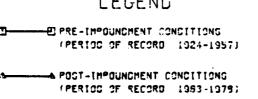




FLOW DURATION CURVES AT DAM SITE APRIL FLOWS

U.S. ARMY ENGINEER DISTRICT. FORT WORTH
TO ACCOMPANY INSTREMM FLOW PROBLEMS AND NEEDS
EVALUATION REPORT OF DECEMBER 1990
FLATE 16

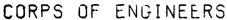




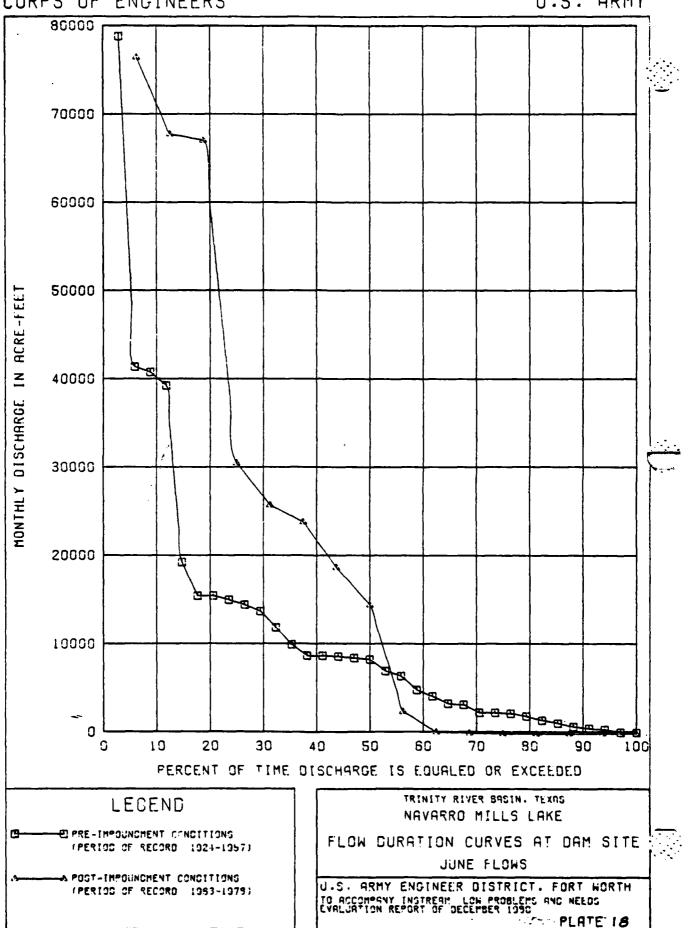
NAVARRO MILLS LAKE
FLOW DURATION CURVES AT DAM SITE
MAY FLOWS

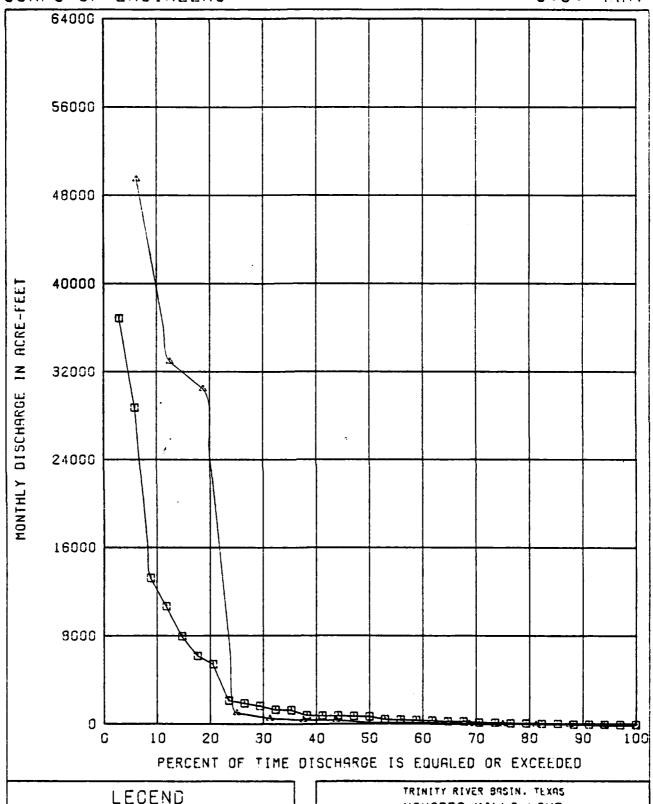
U.S. ARMY ENGINEER DISTRICT. FORT WORTH TO RECOMPANY INSTREAM FLOW PROBLEMS AND NEEDS EVALUATION REPORT OF DECEMBER 1998

PLATE 17



U.S. ARMY





E PRE-IMPOUNDMENT CONDITIONS (PERIOD OF RECORD 1024-1057)

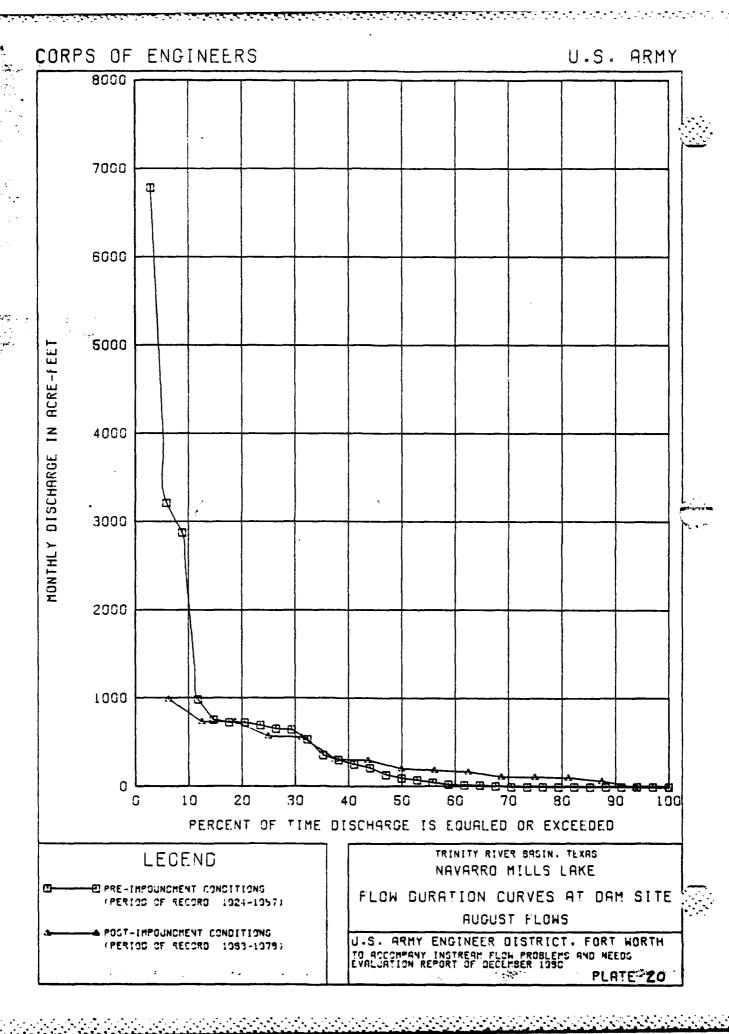
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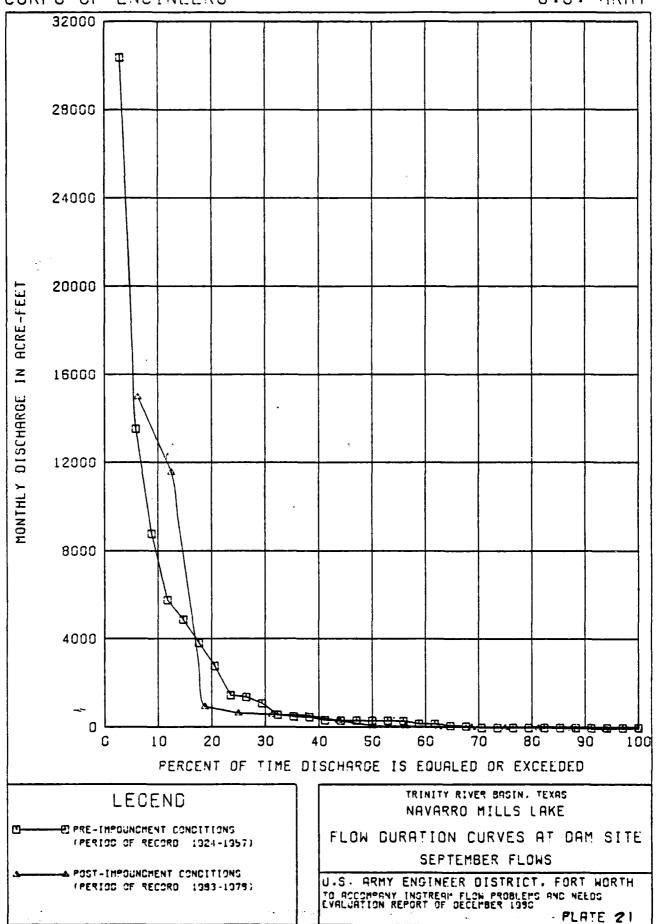
NAVARRO MILLS LAKE

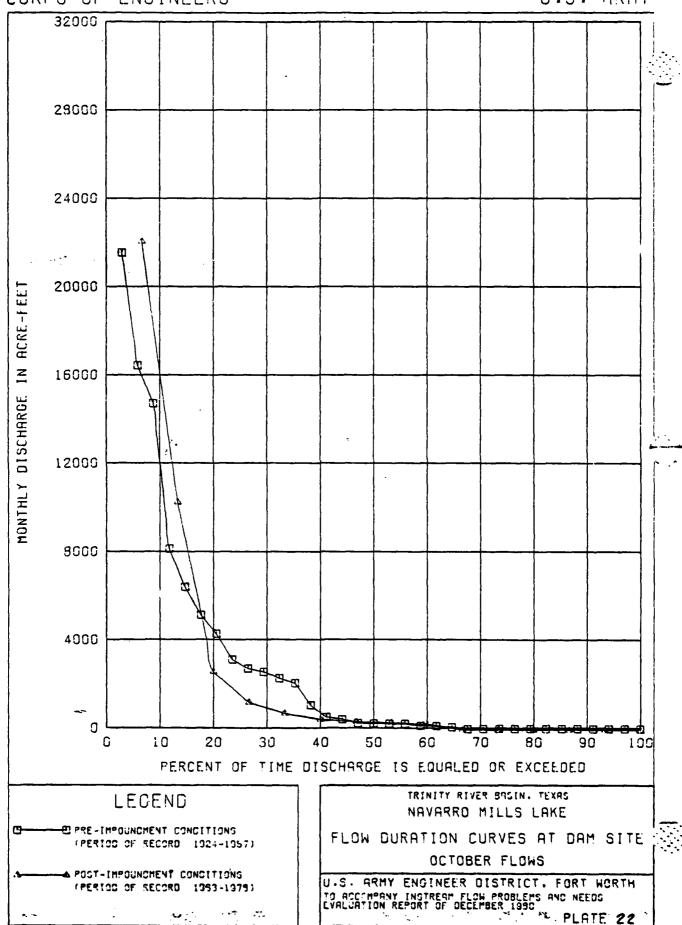
FLOW DURATION CURVES AT DAM SITE

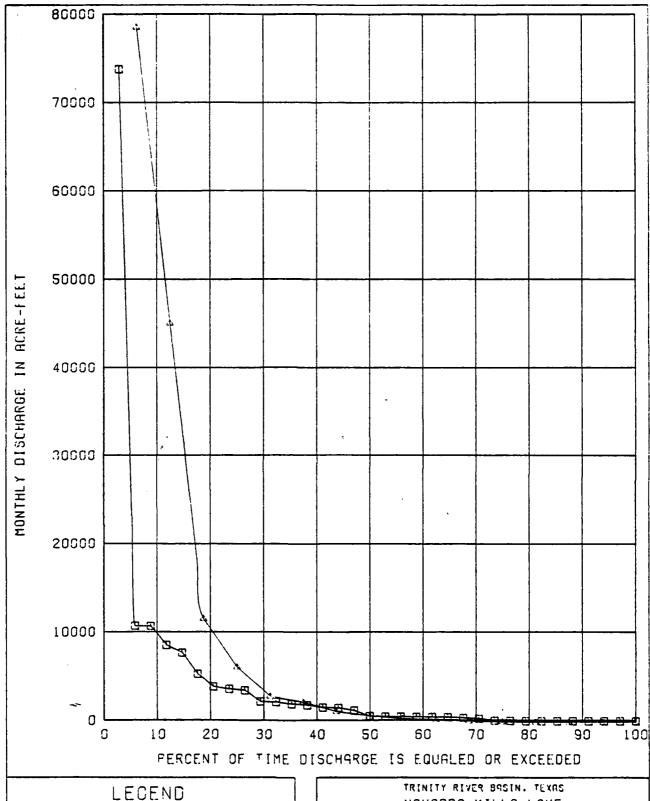
JULY FLOWS

U.S. ARMY ENGINEER DISTRICT. FORT WORTH TO ASCOMPANY INSTREAM FLOW PROBLEMS AND NEEDS EVALUATION REPORT OF DECEMBER 1985 PLATE (9







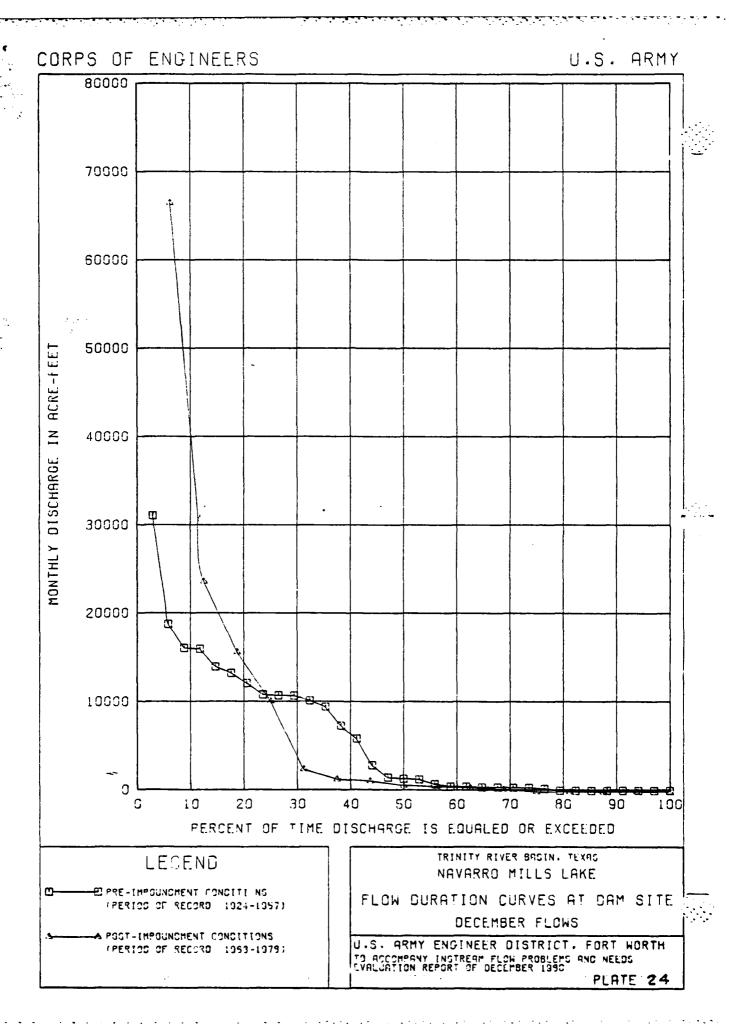


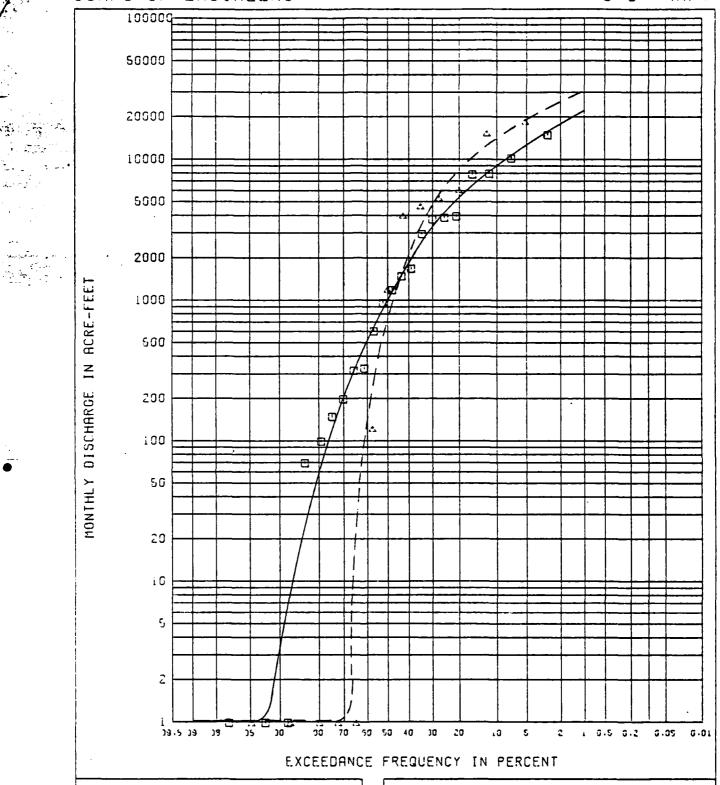
-E PRE-IMPOUNDMENT CONCITIONS (PERIOD OF RECORD 1924-1957)

POST-IMPOUNDMENT CONDITIONS (PERIOD OF RECORD 1953-1979) NAVARRO MILLS LAKE

FLOW DURATION CURVES AT DAM SITE NOVEMBER FLOWS

U.S. ARMY ENGINEER DISTRICT. FORT WORTH TO ASCOMMANY INSTREAM FLOW PROBLEMS AND NEEDS EVALUATION REPORT OF DECEMBER 1090 PLATE 23





PRE-IMPOUNDMENT CONDITIONS
(PERIOD OF RECORD 1939-1959)

— — POST-IMPOUNDMENT CONDITIONS (PERIOD OF RECORD (966-1979) TRINITY RIVER BRSIN, TEXAS

BARDWELL LAKE

DISCHARGE-FREQUENCY RELATIONS

AT DAM SITE

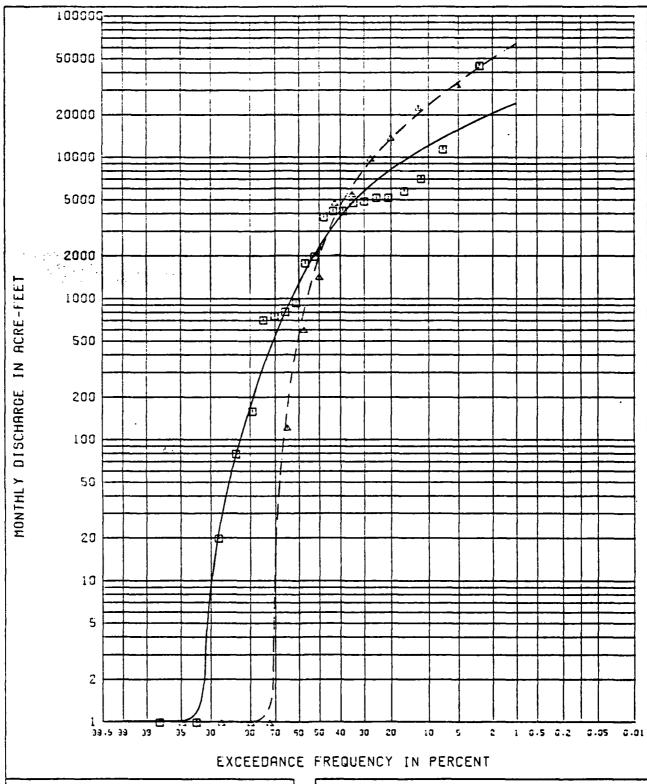
JANUARY FLOWS

U.S. ARMY ENGINEER DISTRICT. FORT WORTH TO ACCOMPANY INSTREMM FLOW PROBLEMS AND NEEDS EVALUATION REPORT OF DECEMBER 1990

(PERIOD OF RECORD 1939-1959)

A POST-IMPOUNGMENT CONDITIONS (PERIOD OF RECORD 1955-1975) DISCHARGE-FREQUENCY RELATIONS AT DAM SITE FEBRUARY FLOWS

U.S. ARMY ENGINEER DISTRICT. FORT WORTH PLATE 2



PRE-IMPOUNDMENT CONDITIONS
(PERIOD OF RECORD 1939-1959)

- -- POST-IMPOUNDMENT CONDITIONS
(PERIOD OF RECORD 1955-1975)

TRINITY RIVER BASIN, TEXAS

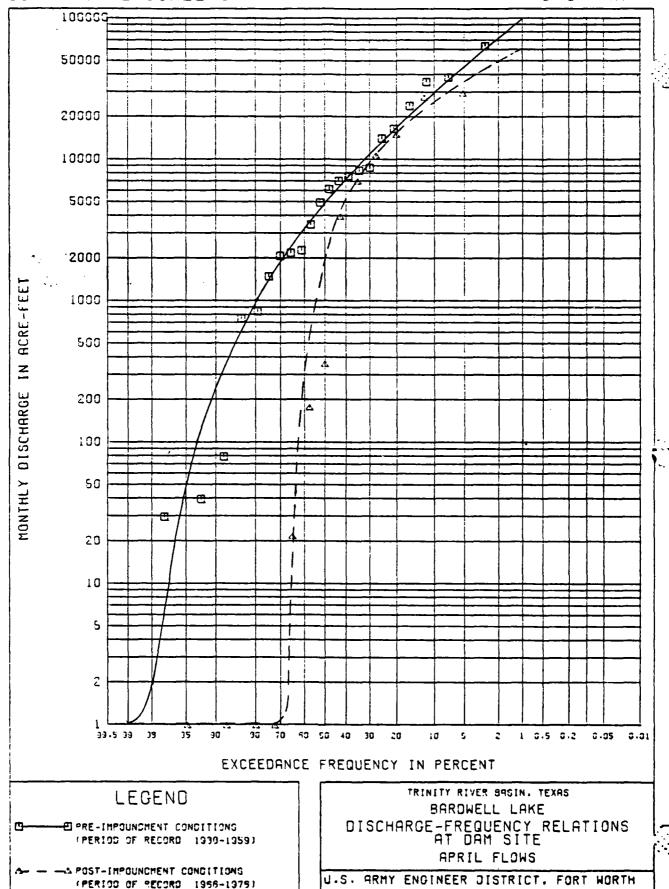
BARDWELL LAKE

DISCHARGE-FREQUENCY RELATIONS

AT DAM SITE

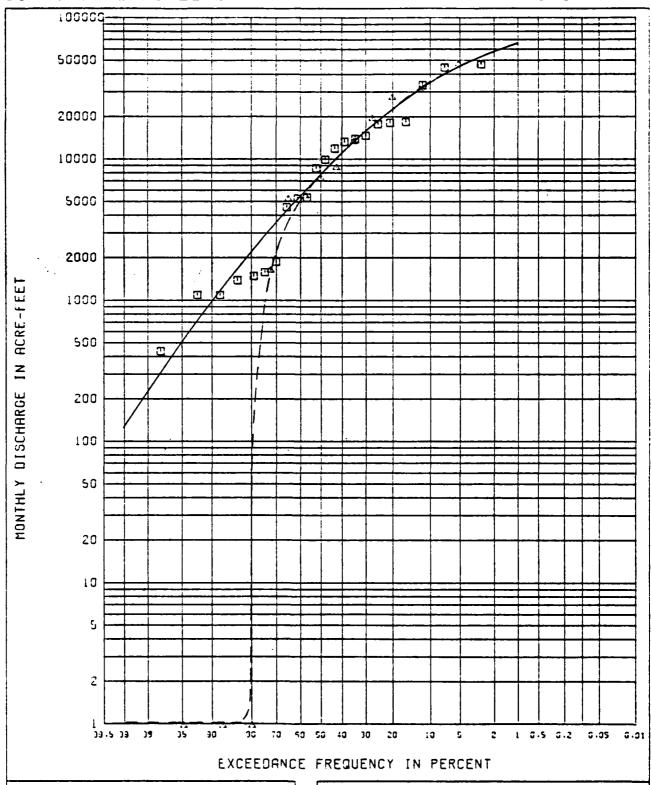
MARCH FLOWS

U.S. ARMY ENGINEER DISTRICT. FORT WORTH TO ACCOMPANY INSTREAM FLOW PROBLEMS AND NEEDS EVALUATION REPORT OF DECEMBER 1990



TO ACCOMPANY INSTREAM FLOW PROBLEMS AND NEEDS EVALUATION REPORT OF DECEMBER 1990

PLATE 4



PRE-IMPOUNDMENT CONDITIONS
(PERIOD OF RECORD 1939-1959)

→ → POST-IMPOUNDMENT CONDITIONS

(PERIOD OF RECORD 1955-1975)

TRINITY RIVER BOSIN. TEXAS

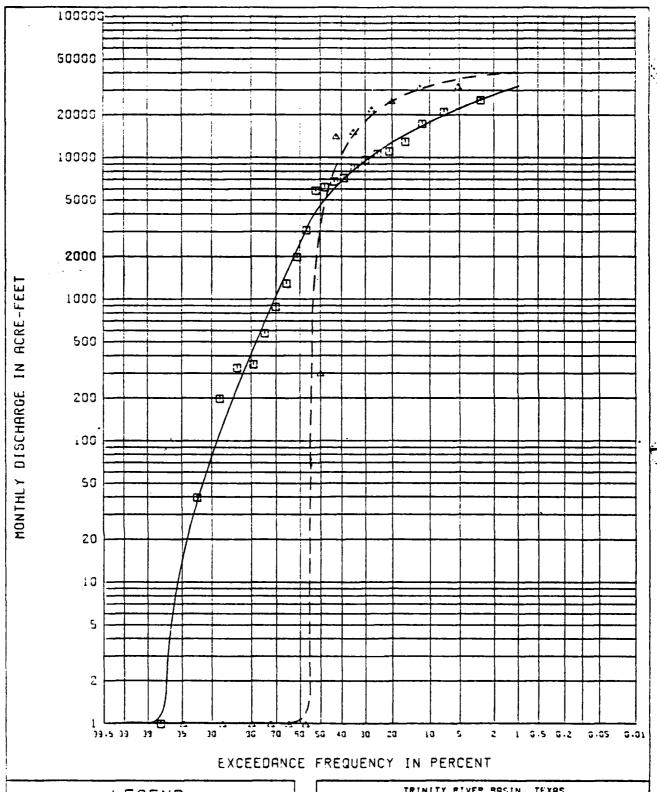
BARDWELL LAKE

DISCHARGE-FREQUENCY RELATIONS

AT DAM SITE

MAY FLOWS

U.S. ARMY ENGINEER DISTRICT. FORT HORTH
TO ACCOMPANY INSTREAM FLOW PROBLEMS AND NEEDS
EVALUATION REPORT OF DECEMBER 1990
PLATE 5



☐ → → ── PRE-IMPOUNCHENT CONDITIONS

(PERIOD OF RECORD 1939-1959)

► - → POST-IMPOUNDMENT CONDITIONS

(PERIOD OF RECORD 1956-1979)

TRINITY RIVER BASIN. TEXAS

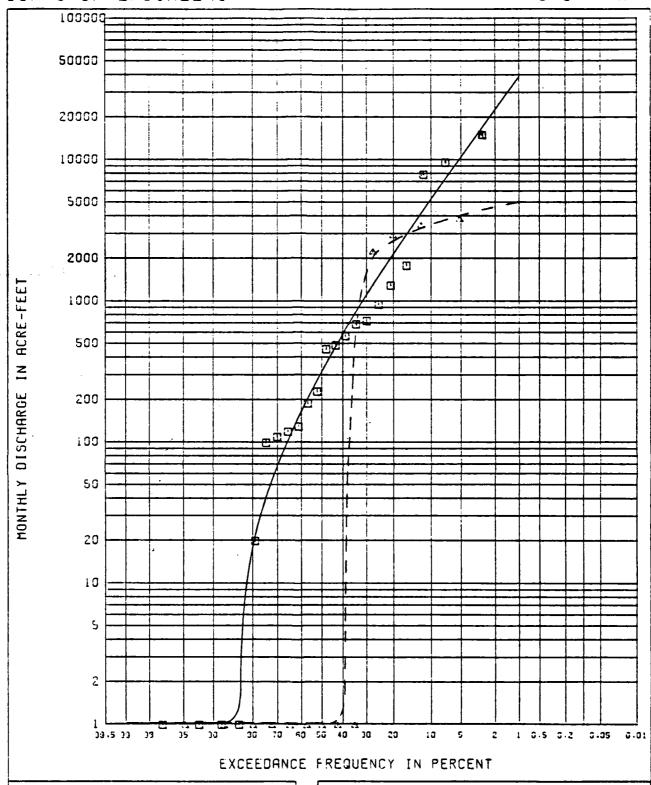
BARDWELL LAKE

DISCHARGE-FREQUENCY RELATIONS

AT DAM SITE

JUNE FLOWS

U.S. ARMY ENGINEER DISTRICT. FORT WORTH TO ACCOMPANY INSTREAM FLOW PROBLEMS AND NEEDS EVALUATION REPORT OF DECEMBER 1990 PLATE 6



PRE-IMPOUNCHENT CONDITIONS
(PERIOD OF RECORD 1939-1959)

- - Depost-impoundment conditions (Period of Record 1959-1975)

TRINITY RIVER BASIN, TEXAS

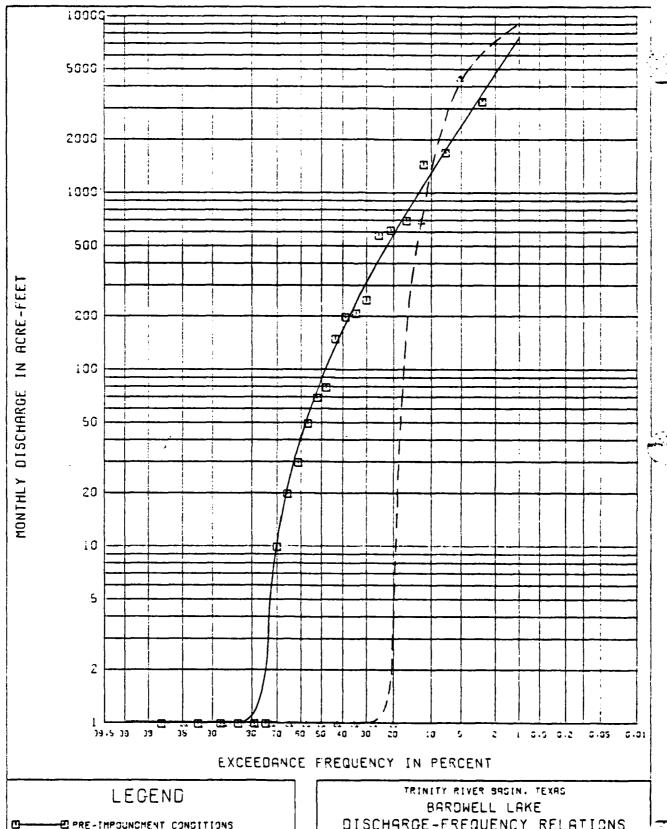
BARDWELL LAKE

DISCHARGE-FREQUENCY RELATIONS

AT DAM SITE

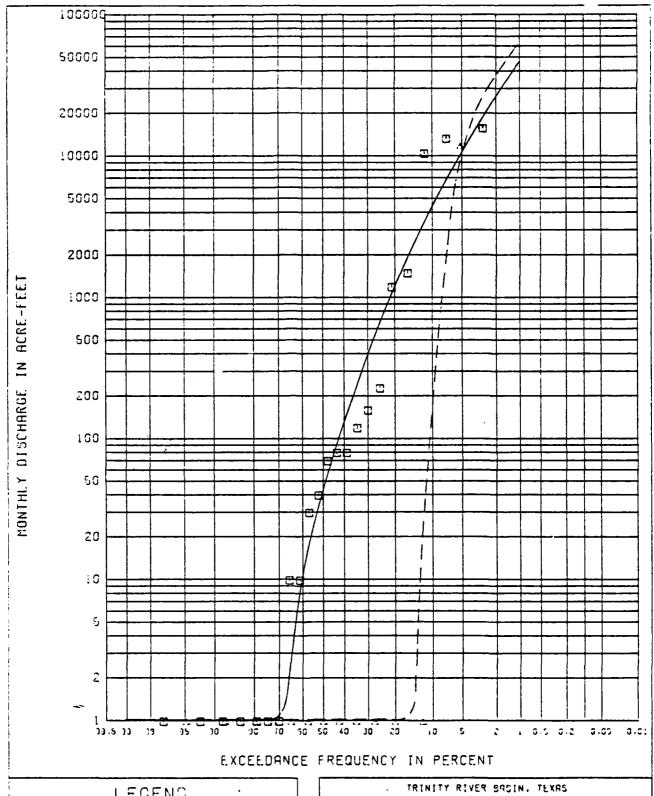
JULY FLOWS

U.S. ARMY ENGINEER DISTRICT. FORT WORTH
TO ACCOMPANY INSTREMM FLOW PROBLEMS AND NEEDS
EVALUATION REPORT OF DECEMBER 1990
PLATE 7



2 PRE-IMPOUNDMENT CONDITIONS (PERIOD OF RECORD 1939-1959) -A POST-IMPOUNCHENT CONCITIONS (PERIOD OF RECORD 1955-1975) DISCHARGE-FREQUENCY RELATIONS AT DAM SITE AUGUST FLOWS

U.S. ARMY ENGINEER DISTRICT. FORT WORTH TO ACCOMPANY INSTREAM FLOW PROBLEMS AND NEEDS EVALUATION REPORT OF DECEMBER 1990 .PLATE 8

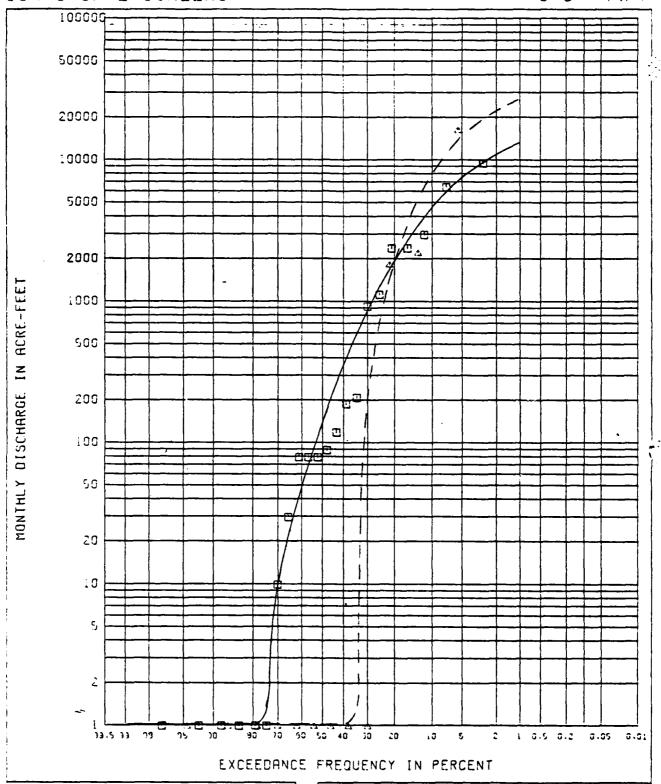


- PRE-IMPOUNDMENT CONSTITIONS !PERIOD OF RECORD [1939-1959]

42 POST-IMPOUNDMENT CONDITIONS (PERIOD OF RECORD 1955-1975)

BARDWELL LAKE DISCHARGE-FREQUENCY RELATIONS AT DAM SITE SEPTEMBER FLOWS

U.S. ARMY ENGINEER DISTRICT. FORT WORTH TO ACCOMPANY INSTREAM FLOW PROBLEMS AND MEEDS EVALUATION REPORT OF DECEMBER 1990 PLATE 9



D PPE-IMPOUNDMENT CONDITIONS
(PERIOD OF PECORD 1039-1359)

→ — → POST-IMPOUNDMENT CONDITIONS

(PERIOD OF RECORD 1955-1975)

TRINITY RIVER BACIN. TEXAS

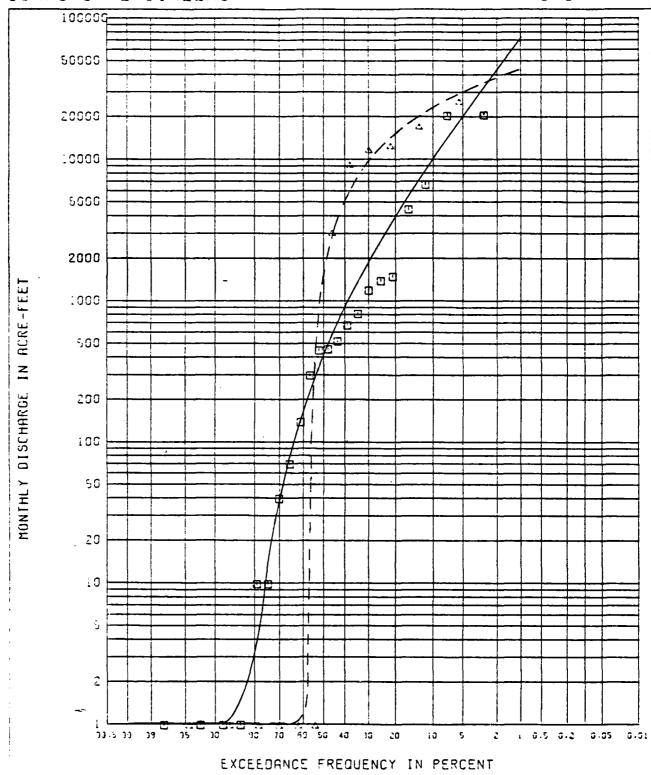
BARDWELL LAKE

DISCHARGE-FREQUENCY RELATIONS

AT DAM SITE

OCTOBER FLOWS

U.S. ARMY ENGINEER DISTRICT. FORT WORTH
TO ACCOMPANY INSTREAM FLOW PROBLEMS AND NEEDS
EVALUATION REPORT OF DECEMBER 1990
PLATE 10



☐ PRE-IMPOUNDMENT CONDITIONS
(PERIOD OF PECORD 1039-1953)

POST-IMPOUNDMENT CONDITIONS (PERIOD OF FECORO 1955-1979)

TRINITY RIVER BESIN, TEXAS

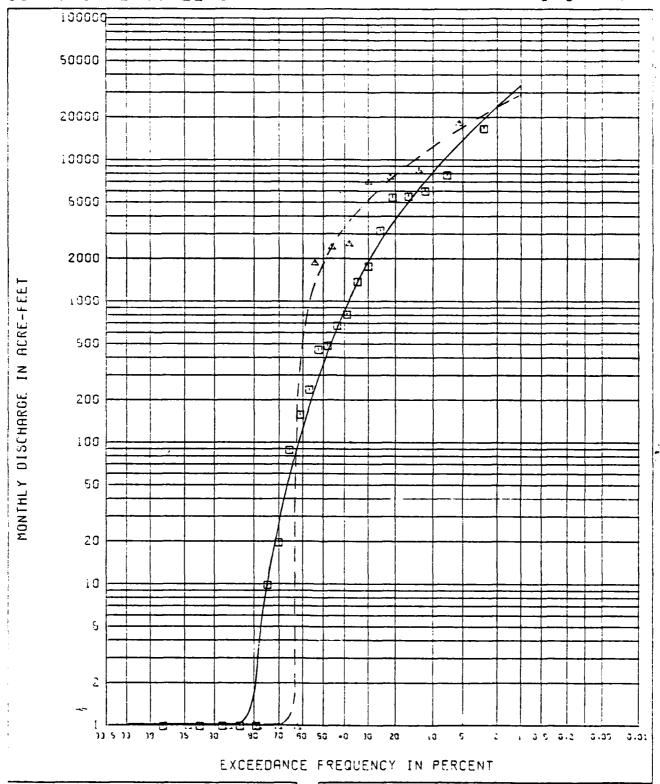
BARDWELL LAKE

DISCHARGE-FREQUENCY RELATIONS

AT DAM SITE

NOVEMBER FLOWS

U.S. ARMY ENGINEER DISTRICT. FORT WORTH
TO ACCOMPANY INSTREAM FLOW PROBLEMS AND NEEDS
EVALUATION REPORT OF DECEMBER 1990
PLATE 11



PRE-IMPOUNDMENT CONDITIONS
(PERIOD OF RECORD 1939-1959)

- - POST-IMPOUNDMENT CONDITIONS
(PERIOD OF RECORD 1965-1976)

TRINITY RIVER BASIN, TEXAS

BARDWELL LAKE

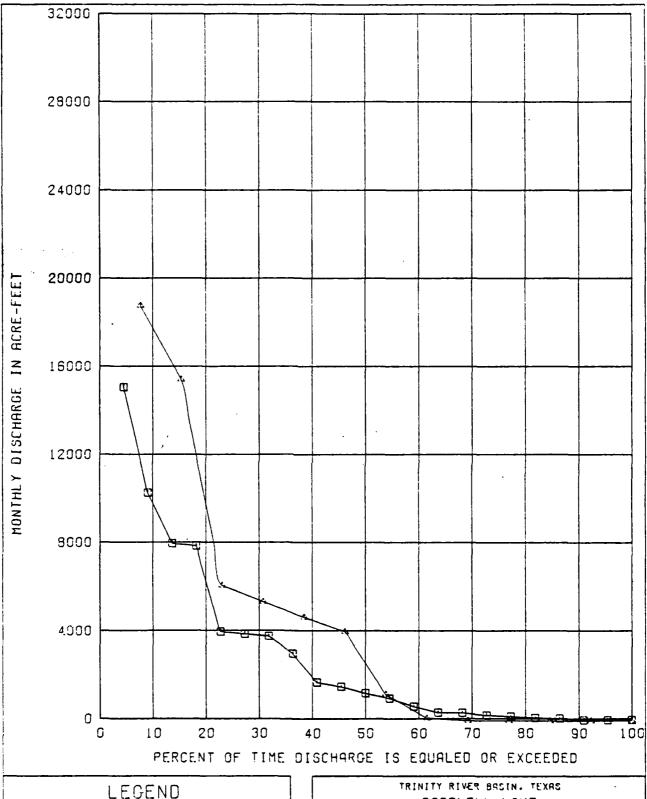
DISCHARGE-FREQUENCY RELATIONS

AT DAM SITE

DECEMBER FLOWS

U.S. ARMY ENGINEER DISTRICT. FORT WORTH TO ACCOMPANY INSTREAM FLOW PROPLETS AND NEEDS EVALUATION REPORT OF DECEMBER 1390

PLATE 12



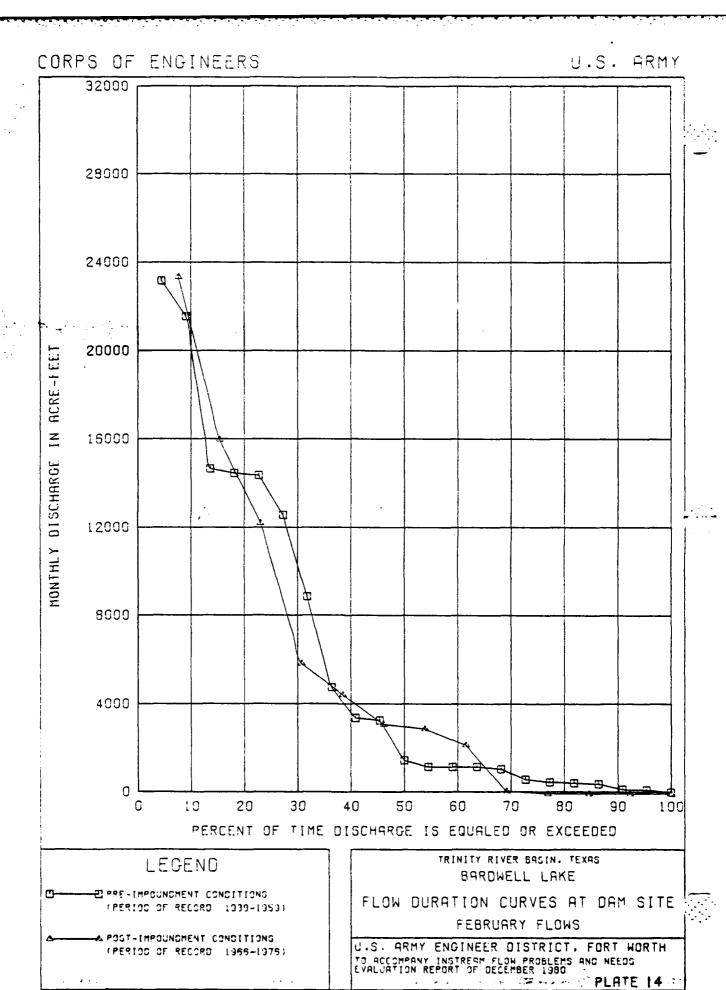
-ED PRE-IMPOUNDMENT CONDITIONS (PERIOD OF RECORD 1939-1959)

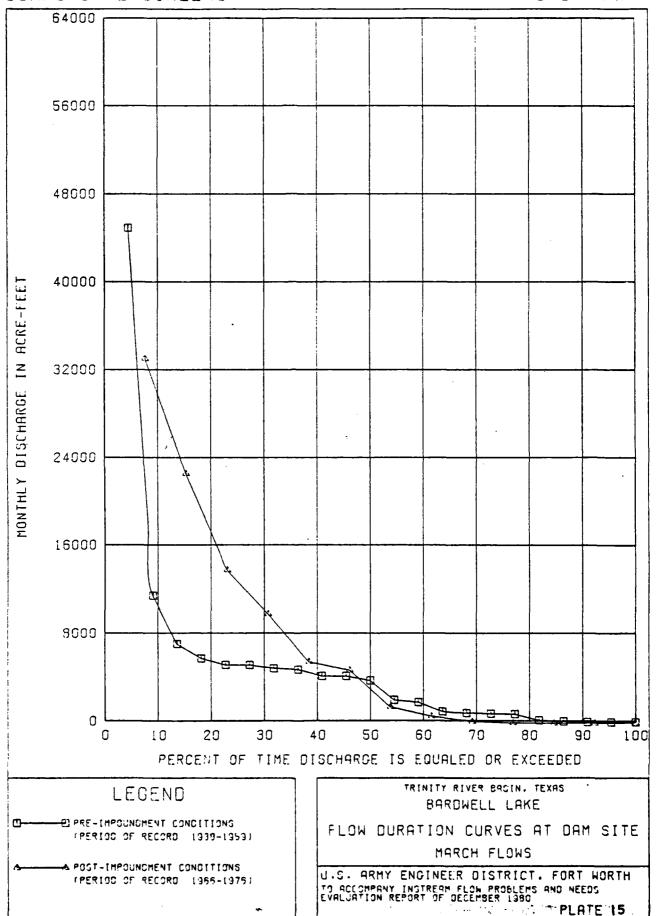
> POST-IMPOUNDMENT CONDITIONS (PERIOD OF RECORD 1955-1975)

BARDWELL LAKE

FLOW DURATION CURVES AT DAM SITE JANUARY FLOWS

U.S. ARMY ENGINEER DISTRICT. FORT WORTH TO ACCOMPANY INSTREAM FLOW PROBLEMS AND NEEDS EVALUATION REPORT OF DECEMBER 1990





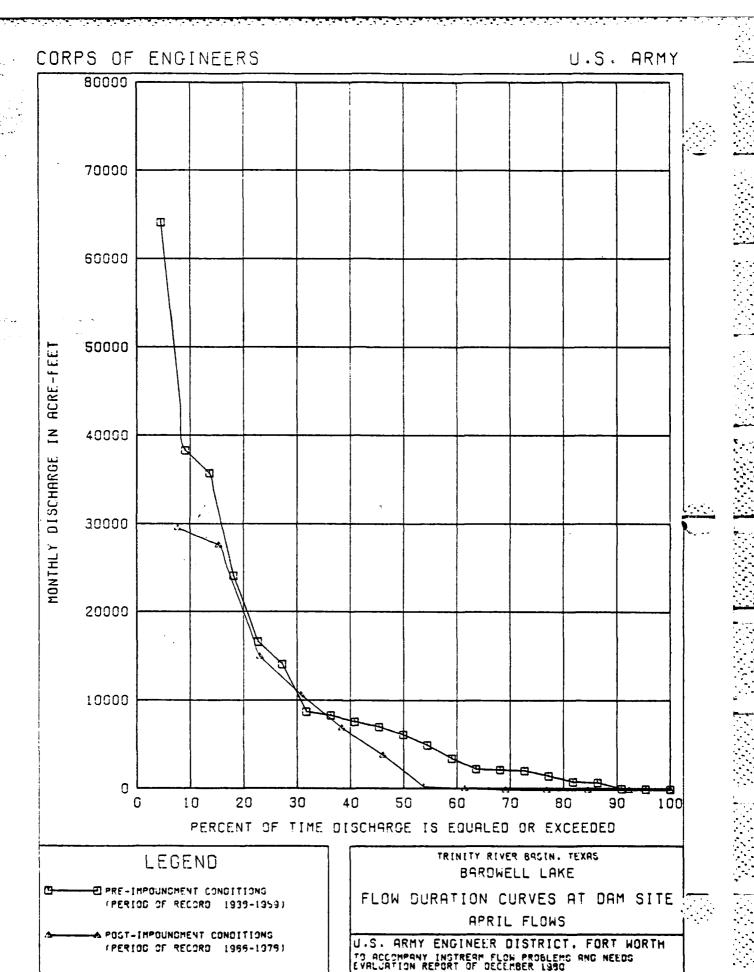
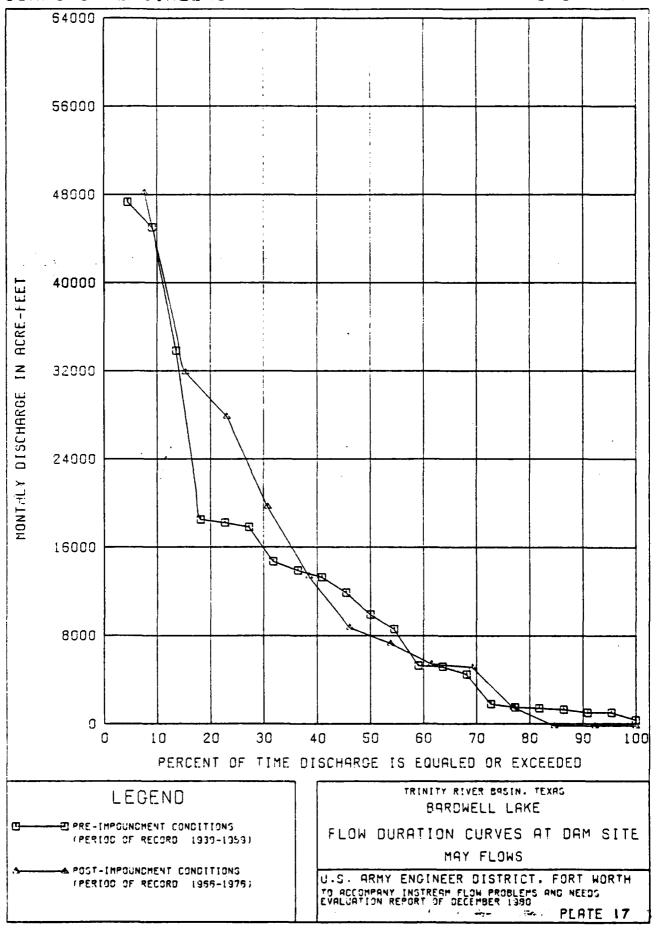
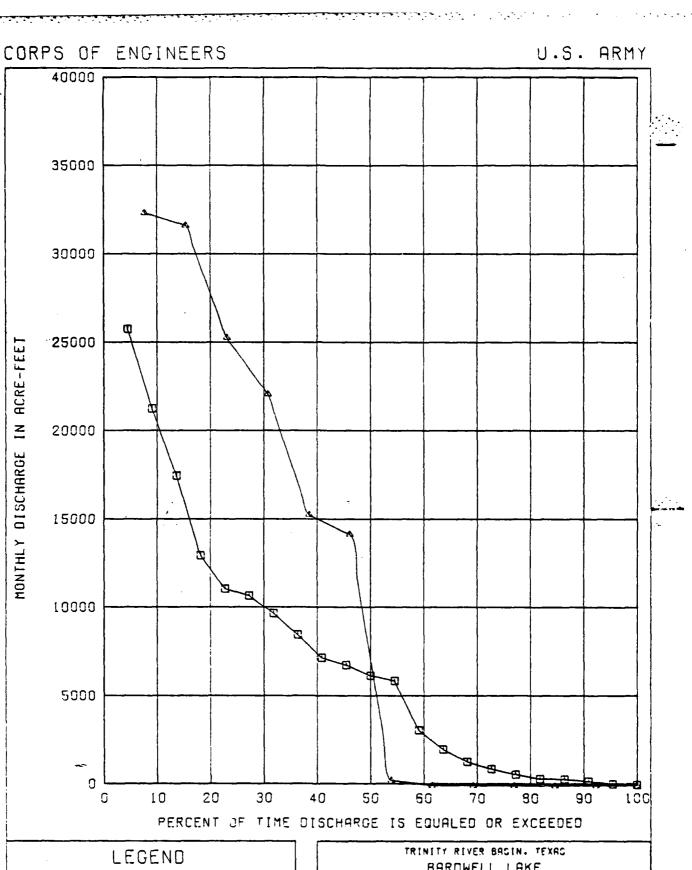
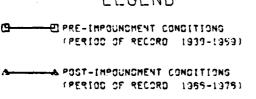


PLATE 16 TO



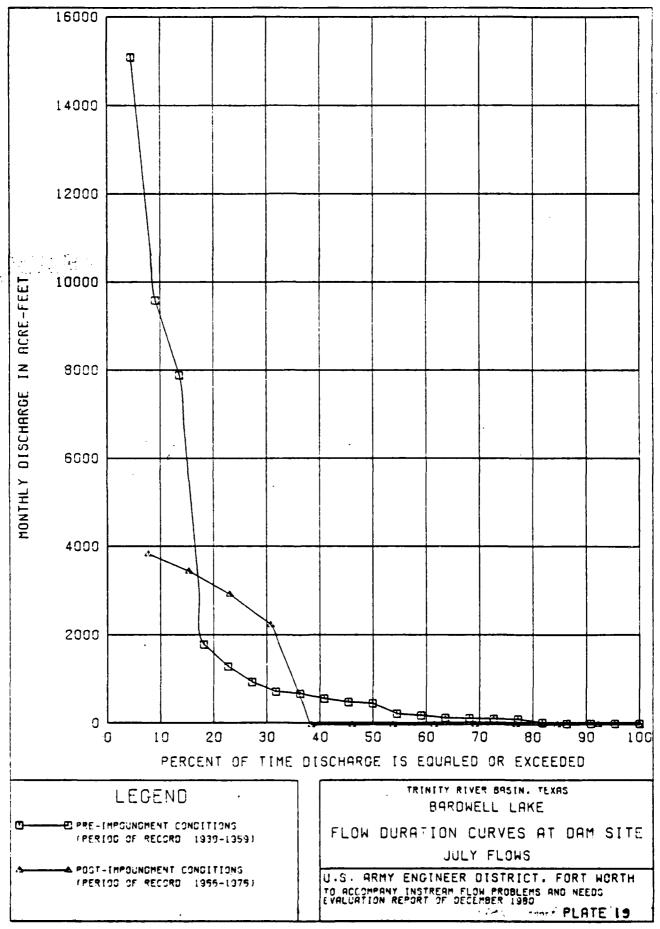


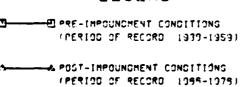


BARDWELL LAKE
FLOW DURATION CURVES AT DAM SITE

U.S. ARMY ENGINEER DISTRICT, FORT WORTH
TO ACCOMPANY INSTREAM FLOW PROBLEMS AND NEEDS
EVALUATION REPORT OF DECEMBER 1990
PLATE 18

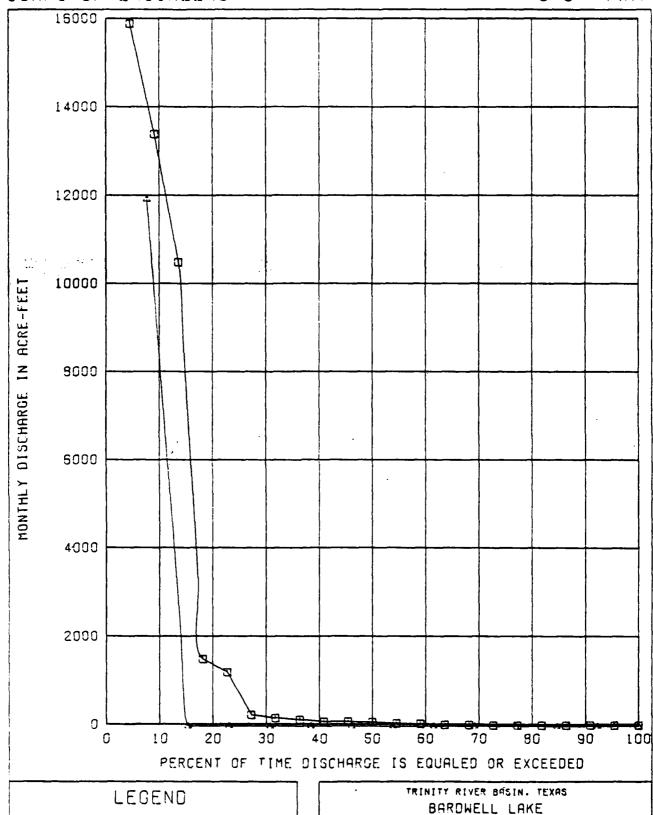
JUNE FLOWS





FLOW DURATION CURVES AT DAM SITE

AUGUST FLOWS U.S. ARMY ENGINEER DISTRICT. FORT WORTH TO ACCOMPANY INSTREMT FLOW PROBLEMS AND NEEDS EVALUATION REPORT OF DECEMBER 1990 PLATE 20

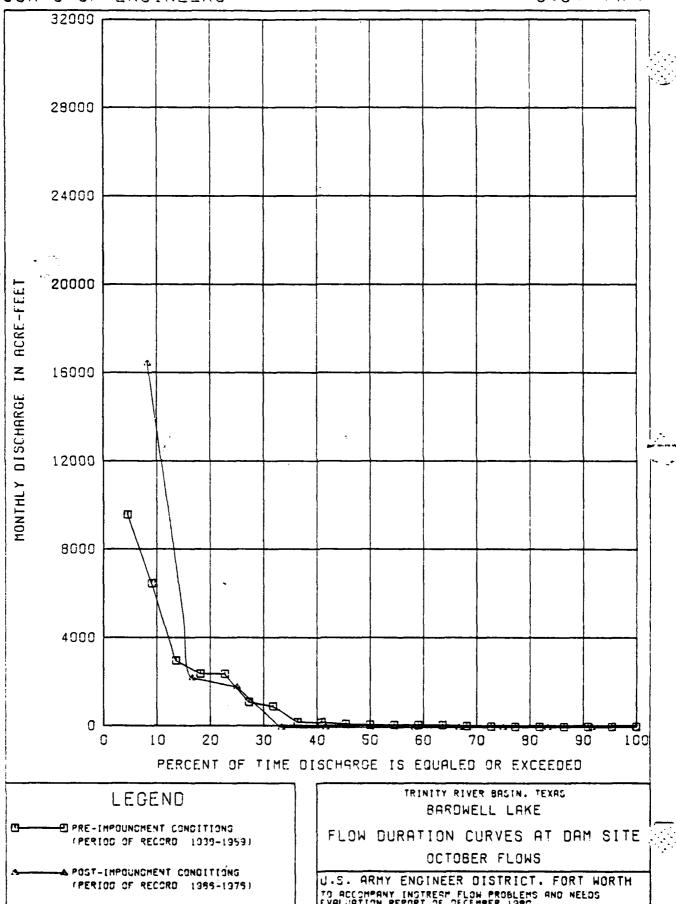


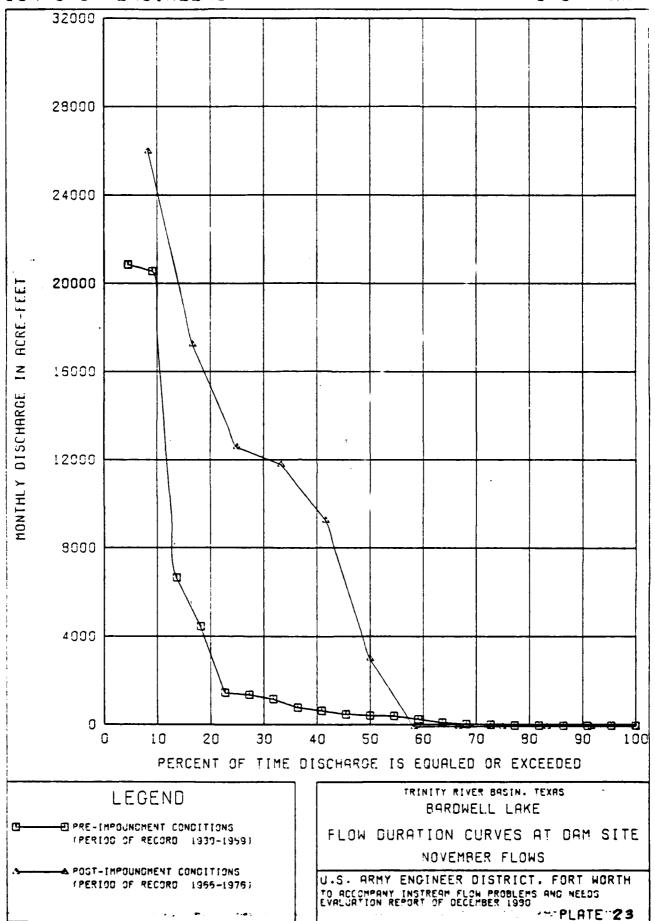
POST-IMPOUNDMENT CONDITIONS
(PERIOD OF RECORD 1955-1975)

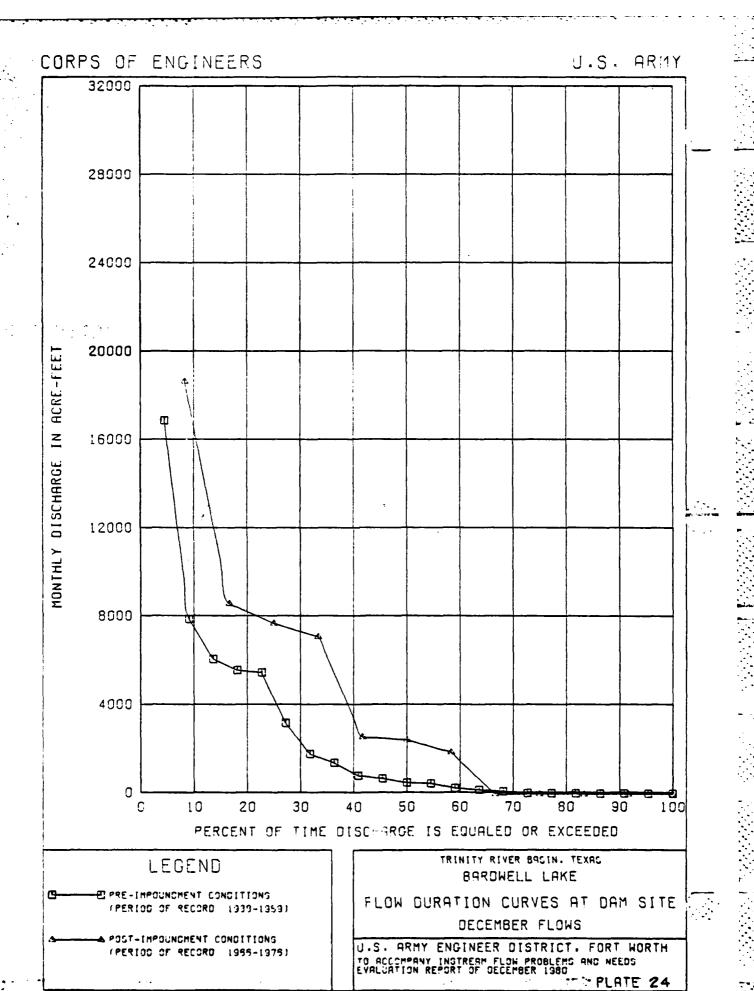
FLOW DURATION CURVES AT DAM SITE SEPTEMBER FLOWS

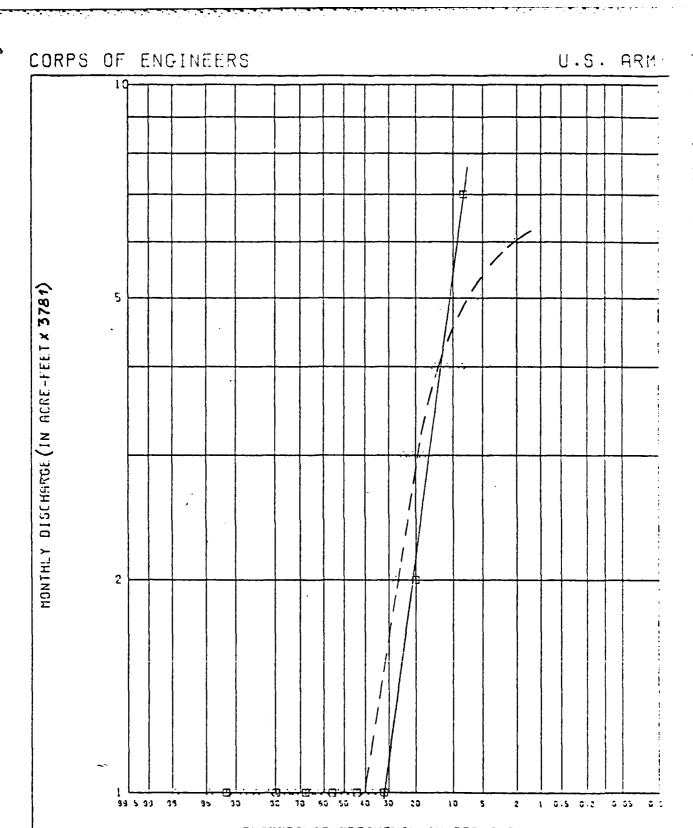
U.S. ARMY ENGINEER DISTRICT. FORT WORTH
TO ACCOMPANY INSTREAM FLOW PROBLEMS AND NEEDS
EVALUATION REPORT OF DECEMBER 1950
PLATE 21

PLATE 22









EXCEEDANCE FREQUENCY IN PERCENT

LEGEND

PRE-IMPOUNDMENT CONDITIONS (PERIOD OF SECOND 1937-1944)

* POST-IMPOUNDMENT CONDITIONS (PERIOD OF RECORD 1915-1976)

BUFFRLO BAYOU

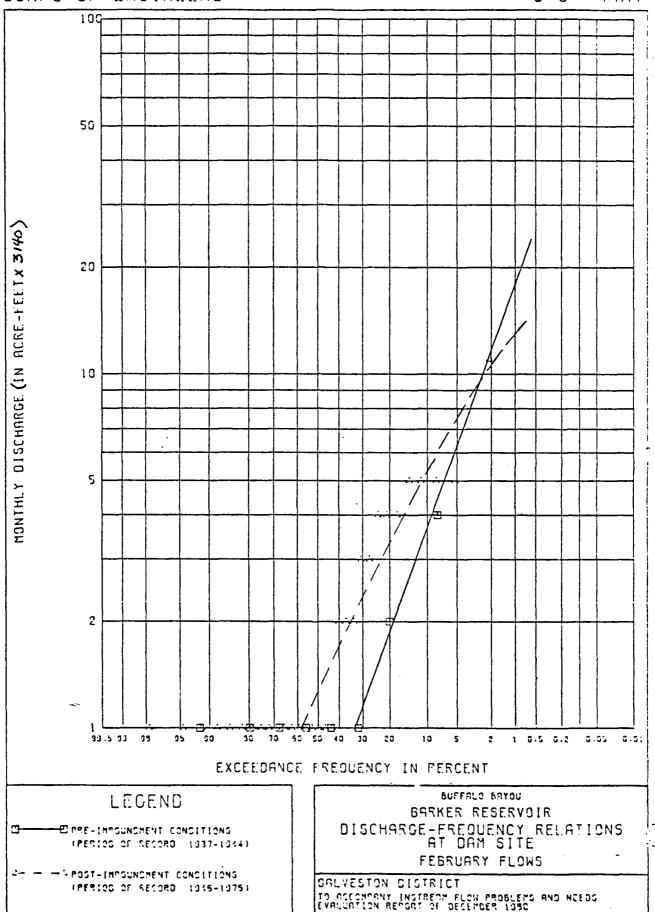
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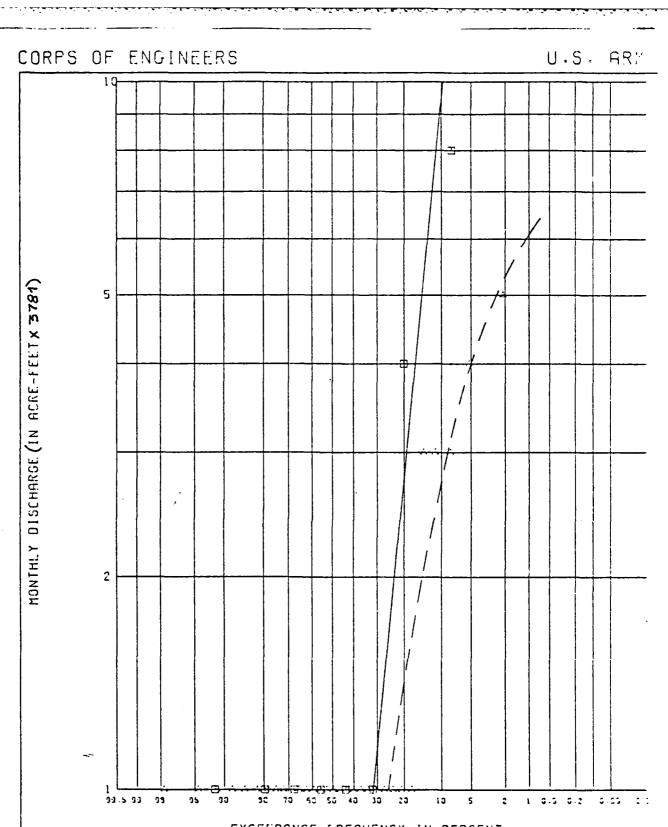
DISCHARGE-FREQUENCY RELATIONS
AT DAM SITE

JANUARY FLOWS

SALVESTON DISTRICT
TO ASCOMPONY INSTREM FLOW PROBLEMS AND NOEDS .
EVALUATION REPORT OF DECEMBER 1999
PLATE 1

PLATE





EXCEEDANCE FREQUENCY IN PERCENT

LEGEND

CONTINUE OF SECOND 1937-1944

- -- POST-INFOUNDMENT CONDITIONS (PERIOD OF RECORD 1015-1075)

BUFFALO BAYOU

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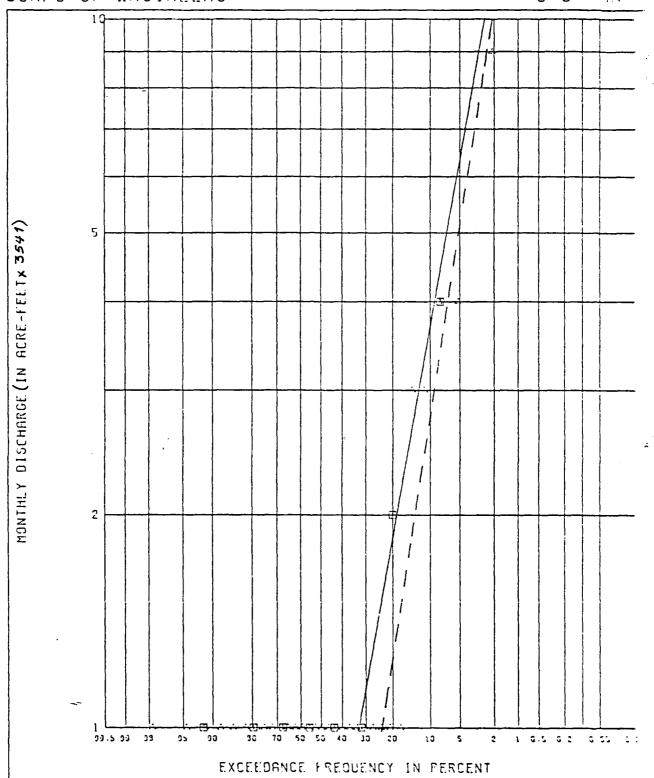
DISCHARGE-FREQUENCY RELATIONS
AT DAM SITE

MARCH FLOWS

SALVESTON DISTRICT

TO ASCOMMENT INSTREMT FLOW PROBLEMS AND NOEDS EVALUATION REPORT OF DESEMBER 1990

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 BUFFALO BAYOU

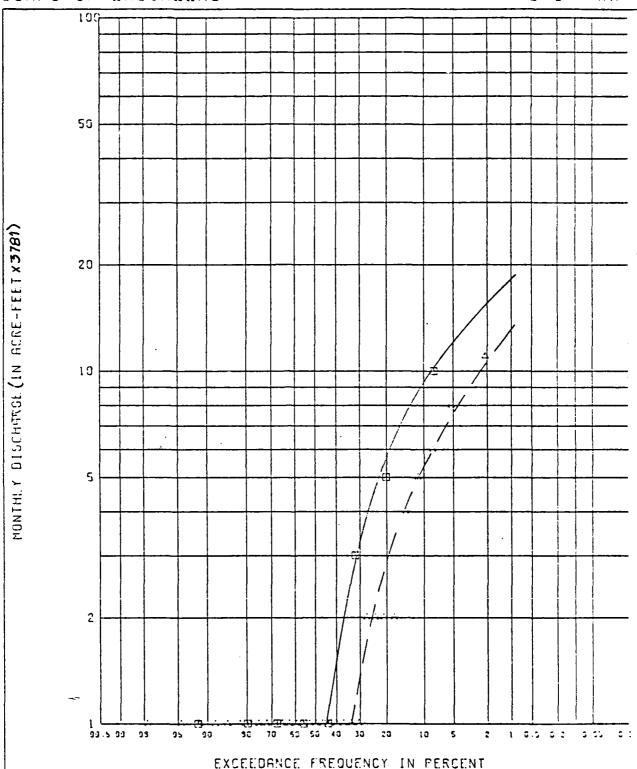
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DISCHARGE-FREQUENCY RELATIONS

AT DAM SITE

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EVALUATION REPORT OF DECEMBER 1990
FLATE 4



PRE-IMPOUNDMENT CONDITIONS (PERIOD OF RECORD 1337-1314)

THE THE POST-IMPOUNDMENT CONDITIONS (PERIOD OF RECORD 1045-1075)

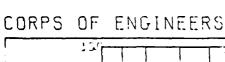
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BARKER RESERVOIR

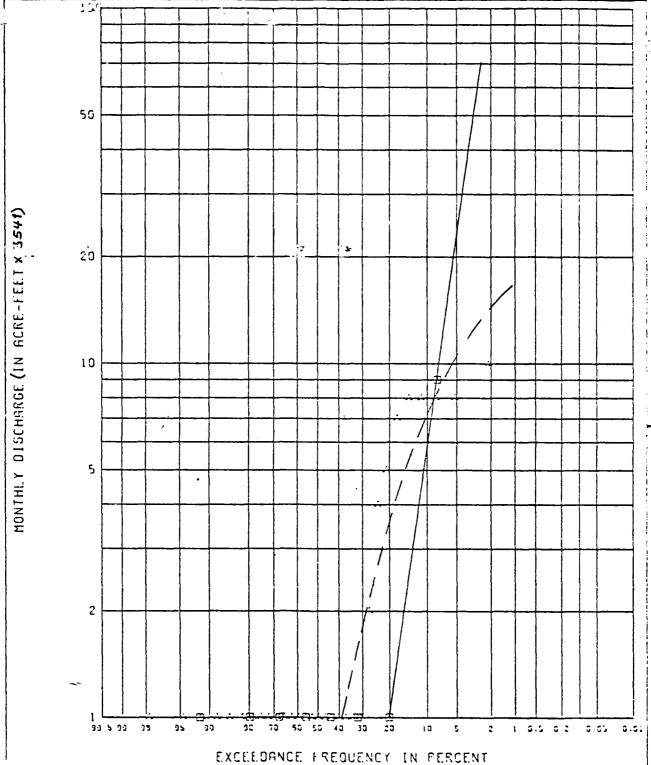
DISCHARGE-FREQUENCY RELATIONS
AT DAM SITE

MAY FLOWS

GALVESTON DISTRICT
TO ACCOMPANY INSTREM FLOW PROBLEMS AND NOTEDS
EVALUATION REPORT OF DECEMBER 1998
FLATE 5







TPERIOR OF RECORD 1937-1944)

- -- POST-IMPOUNDMENT CONDITIONS
(PERIOD OF RECORD 1015-1075)

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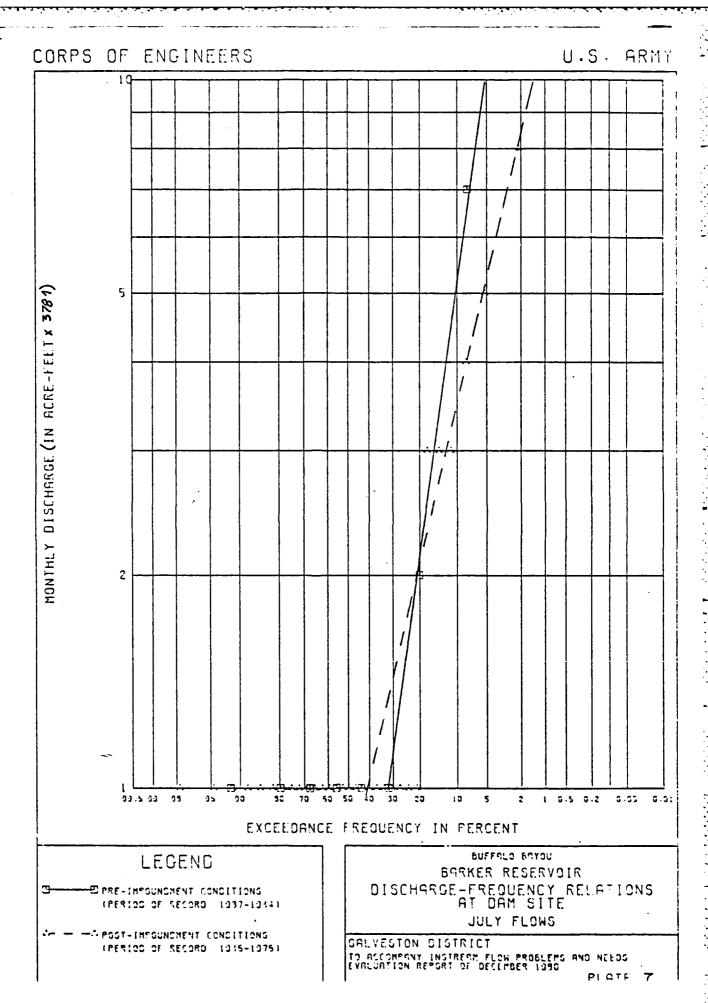
BARKER RESERVOIR

DISCHARGE-FREQUENCY RELATIONS
AT DAM SITE

JUNE FLOWS

SALVESTON DISTRICT
TO ASCOMPANY INSTREMM FLOW PROBLEMS AND NOLOS EVALUATION REPORT OF DECEMBER 1990

FIGURE 6



9 PRE-IMPOUNDMENT CONDITIONS (PERIOD OF RECORD 1037-1044)

 BUFFALO BAYOU

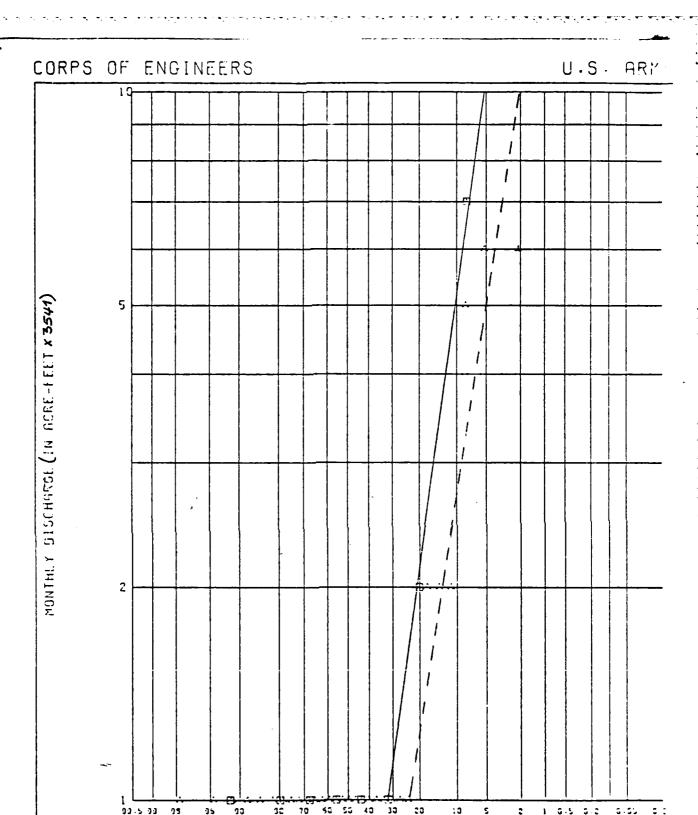
BARKER RESERVOIR

DISCHARGE-FREQUENCY RELATIONS

AT DAM SITE

AUGUST FLOWS

GALVESTON DISTRICT
TO OSCOMPANY INSTREMM FLOW PROBLEMS AND NOEDS
EVOLURION REPORT OF DECEMBER 1996
PLOTE



EXCEEDANCE FREQUENCY IN PERCENT

LEGEND

PRE-IMPSUNCHENT CONCITIONS (PERIOD OF RECORD 1937-1944)

- POST-IMPOUNDMENT CONDITIONS 1PERIOD OF RECORD 1045-10751

BUFFRLD BRYOU BARKER RESERVOIR DISCHARGE-FREQUENCY RELATIONS AT DAM SITE SEFTEMBER FLOWS

SALVESTON SISTRICT

TO ACCOMPANY INSTREAM FLOW PROBLEMS AND NOEDS EVALUATION REPORT OF DECEMBER 1990

EXCEEDANCE FREQUENCY IN PERCENT

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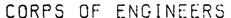
BARKER RESERVOIR

DISCHARGE-FREQUENCY RELATIONS

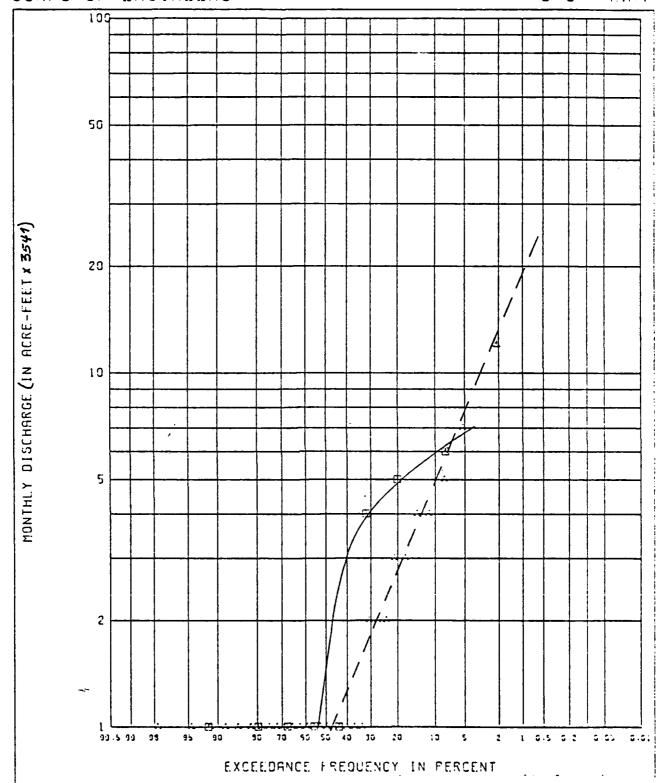
AT DAM SITE

OCTOBER FLOWS

GALVESTON DISTRICT
TO RECOMMENT INSTREMT FLOW PROBLEMS AND NEEDS
EVALUATION REPORT OF DECEMBER 1999
PLATE 10



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G----- DPRE-IMPOUNDMENT CONDITIONS

(PERIOD OF RECORD 1937-1944)

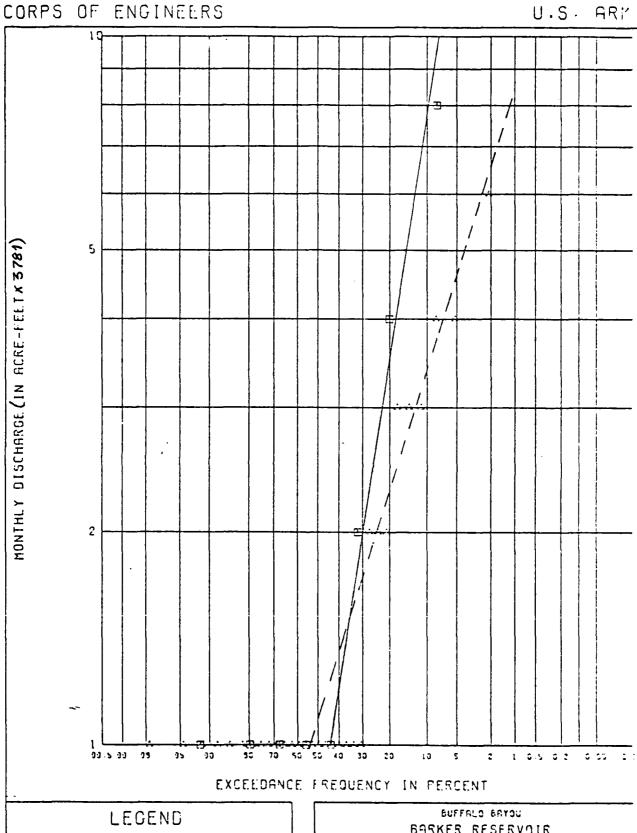
→ POST-(M°OUNDMENT CONDITIONS (PERIOD OF SECORD 1945-1975) BUFFRLO BRYOU

BARKER RESERVOIR

DISCHARGE-FREQUENCY RELATIONS
AT DAM SITE

NOVEMBER FLOWS

GALVESTON DISTRICT
TO RECOMPANY INSTREAM FLOW PROBLEMS AND NEEDS
EVALUATION REPORT OF DECEMBER 1990



-EDPRE-IMPOUNDMENT CONDITIONS (PERIOD OF RECORD 1037-1014)

F - -- POST-INFOUNCHENT CONDITIONS
(PERIOD OF RECORD 10:5-10:75)

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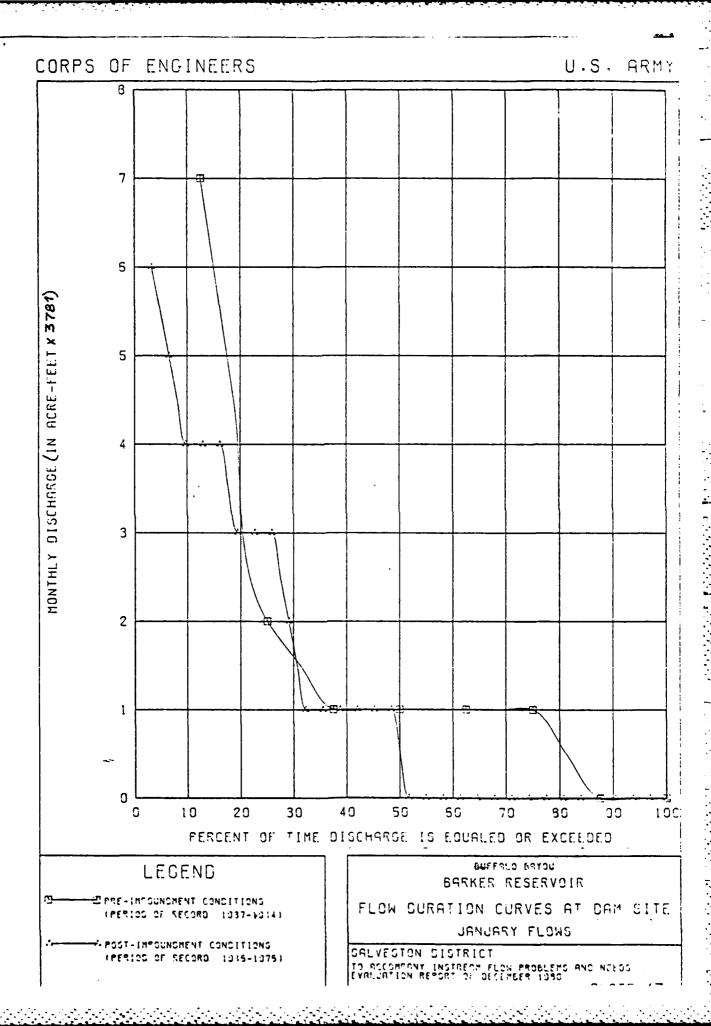
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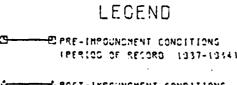
DISCHARGE-FREQUENCY RELATIONS

AT DAM SITE

DECEMBER FLOWS

SALVESTON SISTRICT
TO OCCOMPANY INSTREAM FLOW PROBLEMS AND NEEDS
EVALUATION REPORT OF DECEMBER 1990





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POST-INFOUNCHENT CONDITIONS (PERIOD OF RECORD 1046-1075)

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BUFFOLD BRYOU BARKER RESERVOIR

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FLOW DURATION CURVES AT DAM SITE FEBRUARY FLOWS

SALVESTON SISTRICT

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PERCENT OF TIME DISCHARGE IS EQUALED OR EXCELDED

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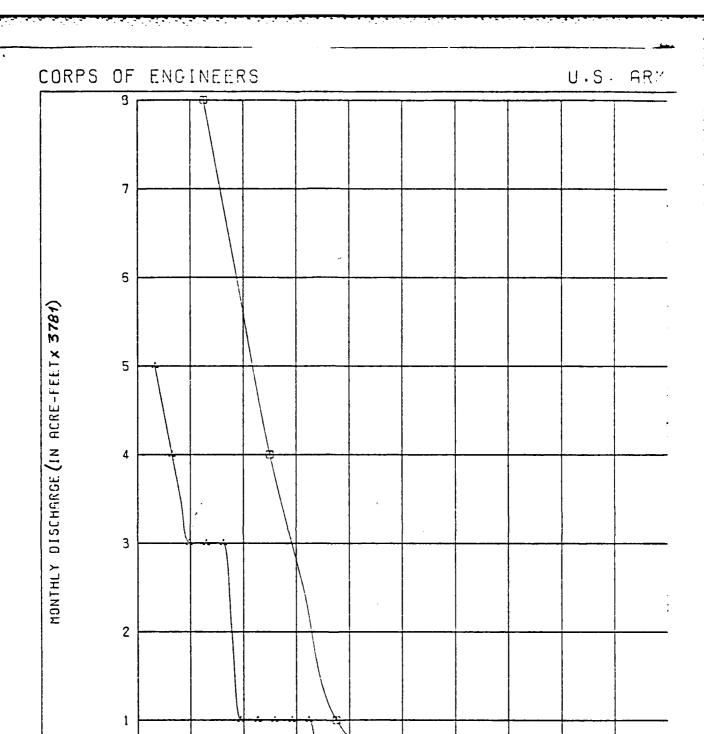
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TO ACCOMPANY INSTREAM FLOW PROBLEMS AND NEEDS -EVALUATION REPORT OF DECEMBER 1090

PLATE 14

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EDPRE-IMPOUNDMENT CONDITIONS (PERIOD OF RECORD 1037-1014)

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PERCENT OF TIME DISCHARGE IS EQUALED OR EXCELDED

POST-IMPOUNDMENT CONDITIONS

(PERIOD OF RECORD 10:75-1075)

BUFFALD BAYOU BARKER RESERVOIR

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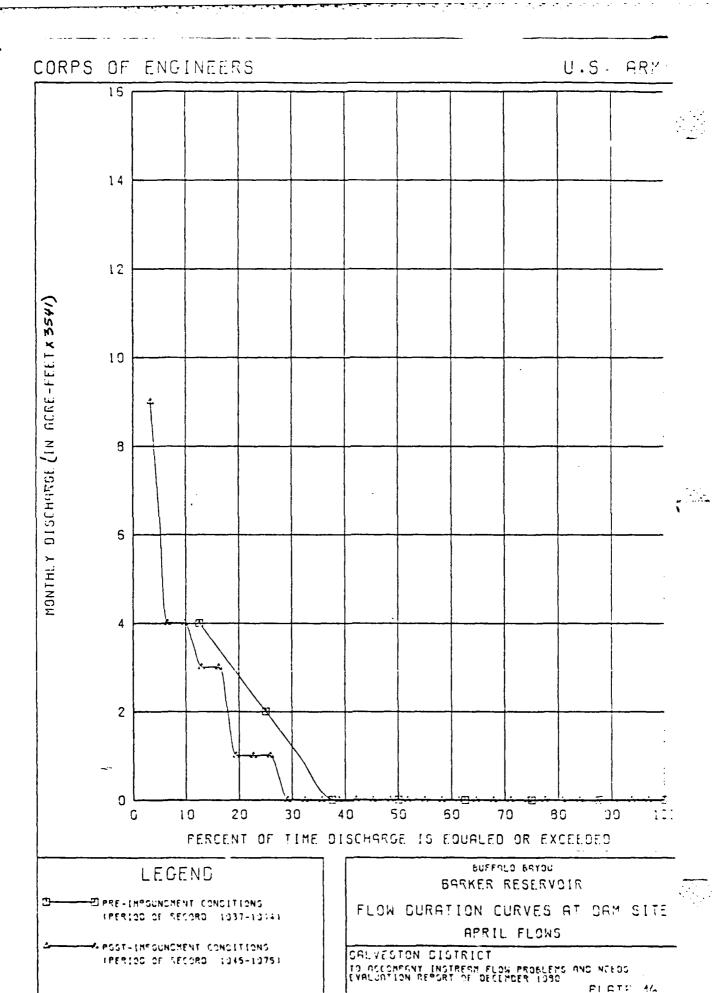
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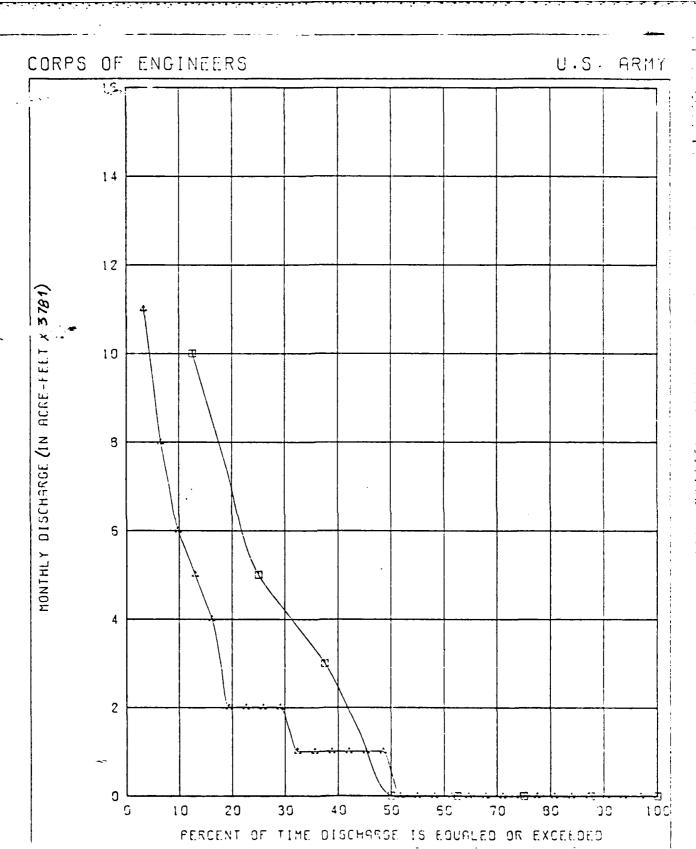
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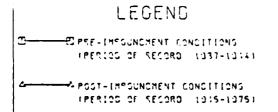
FLOW DURATION CURVES AT DAM SITE MARCH FLOWS

SALVESTON SISTRICT
TO ASCOMENY INSTRESH FLOW PROBLEMS AND NEEDS EVALUATION REPORT OF DECIMER 1990

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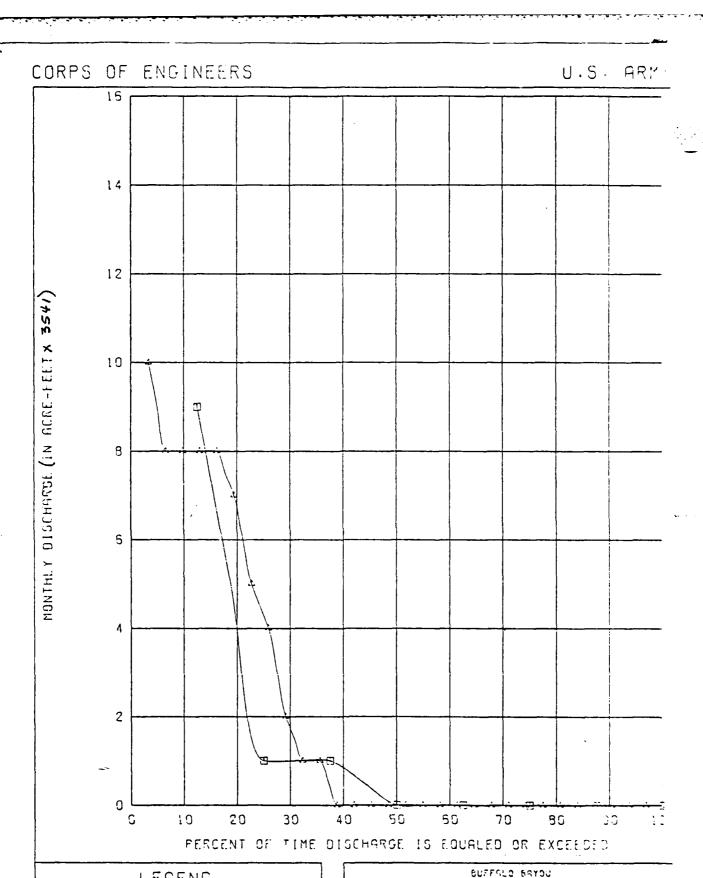
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BARKER RESERVOIR

FLOW BURATION CURVES AT DAM SITE

MAY FLOWS

GALVESTON DISTRICT
TO ASCOMERNY INSTREAM FLOW PROBLEMS AND NOTEDS
EVALUATION REPORT OF DECEMBER 1090



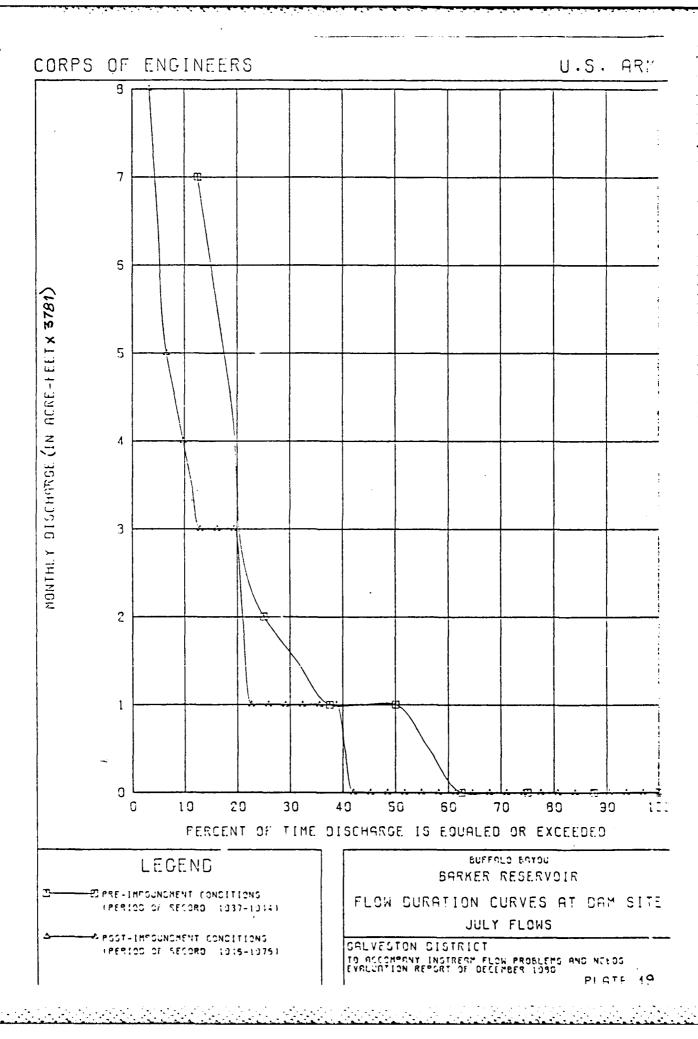
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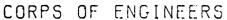
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(PERIOD OF RECORD 1037-1034)

POST-IMPOUNDMENT CONDITIONS
(PERIOD OF RECORD 1035-1075)

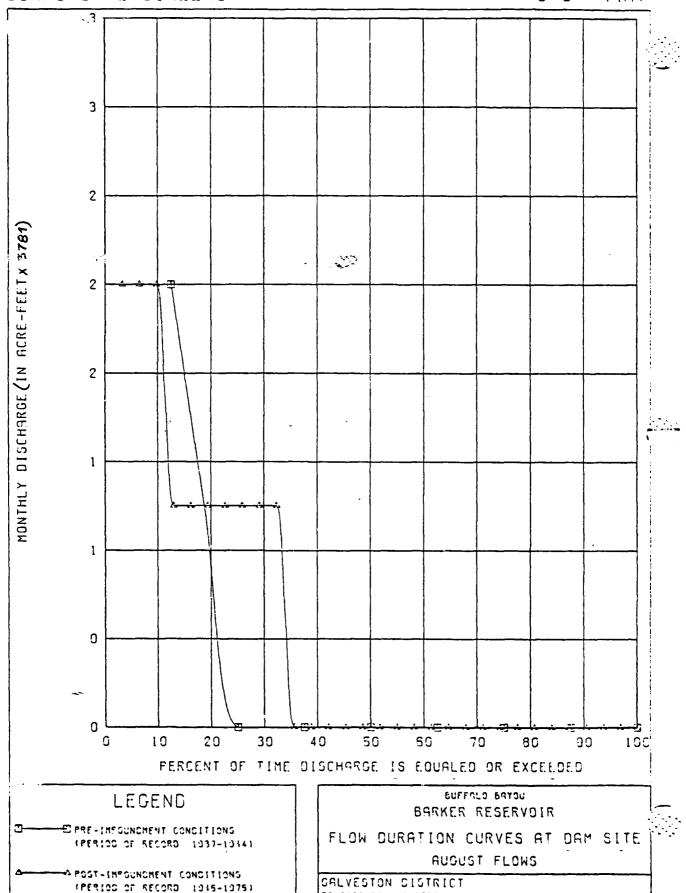
BARKER RESERVOIR
FLOW DURATION CURVES AT DAM SITE
JUNE FLOWS

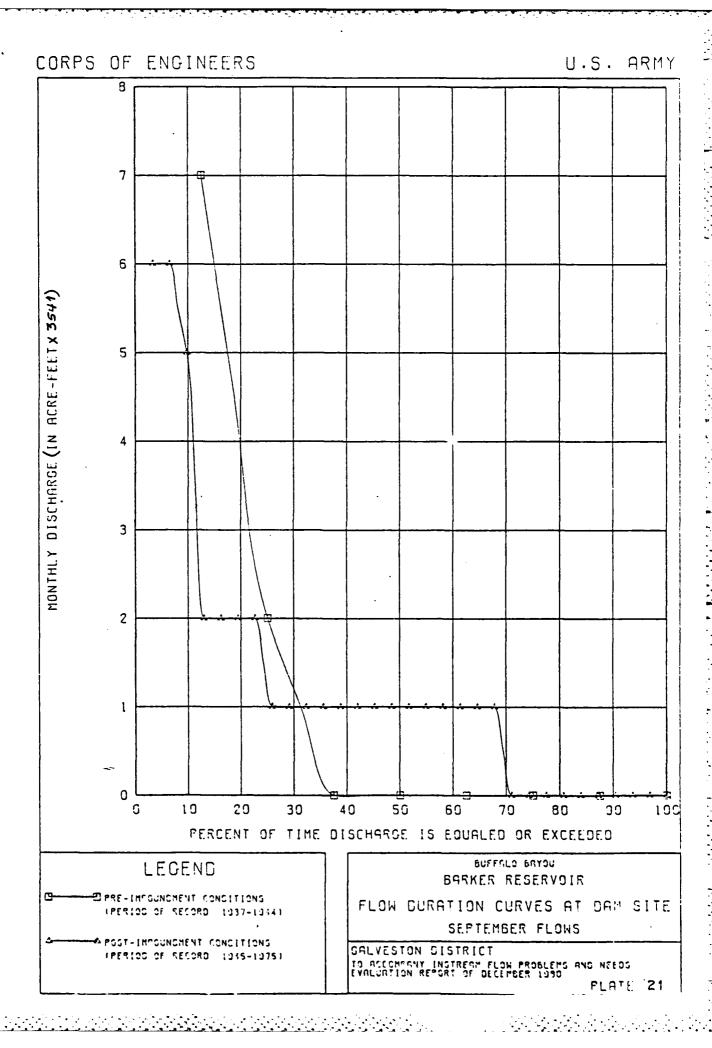
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TO OCCOMPANY INSTREMY FLOW PROBLEMS AND NOTEDS
EVALUATION REPORT OF DECEMBER 1990

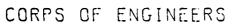




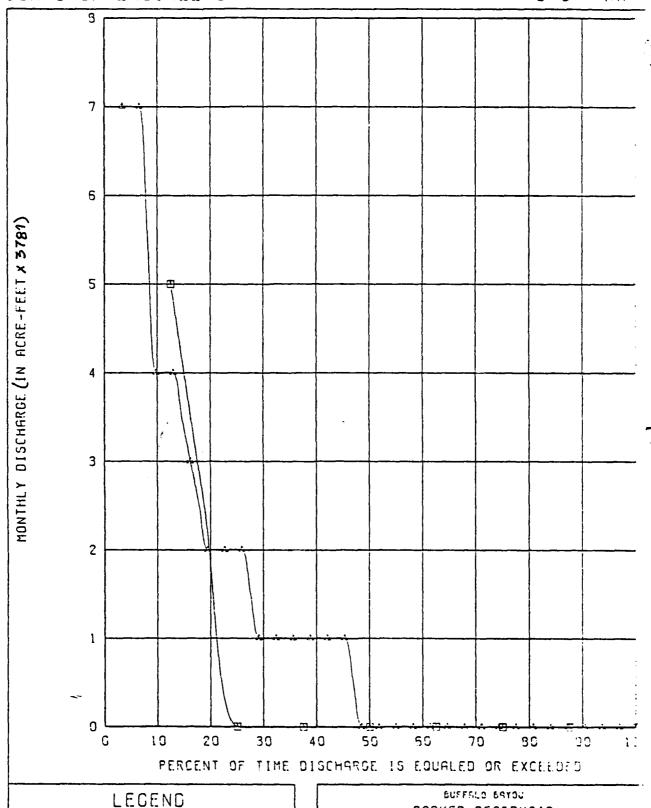
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POST-INFOUNCHENT CONDITIONS

(PERIOD OF RECORD 1037-1014)

POST-INFOUNCHENT CONDITIONS

(PERIOD OF RECORD 1046-1075)

BARKER RESERVOIR
FLOW DURATION CURVES AT DAM SITE OCTOBER FLOWS

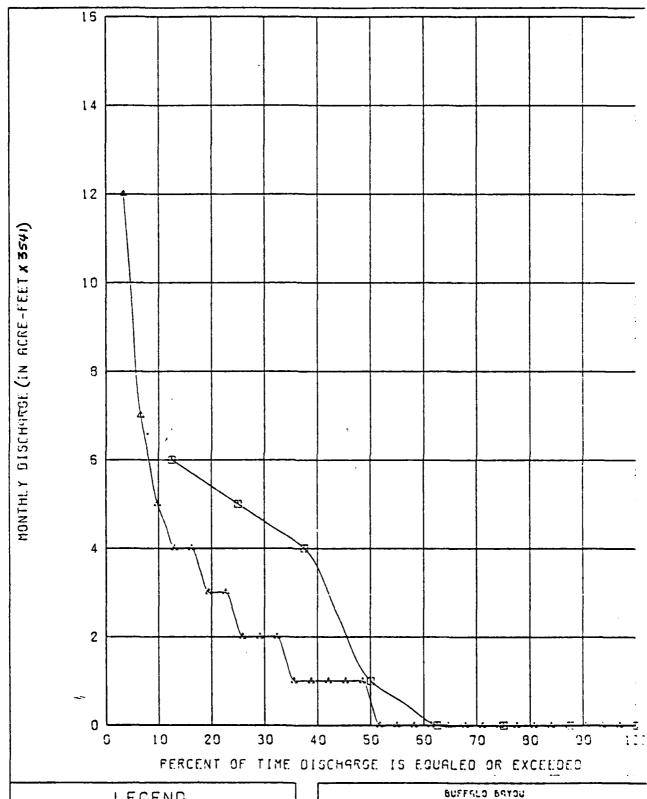
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TO ASSESSED INSTREME

TO ACCOMPONY INSTREMM FLOW PROBLEMS AND NUEDS EVALUATION REPORT OF DECEMBER 1090

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PRE-IMPOUNDMENT CONDITIONS (PERIOD OF RECORD 1037-1044)

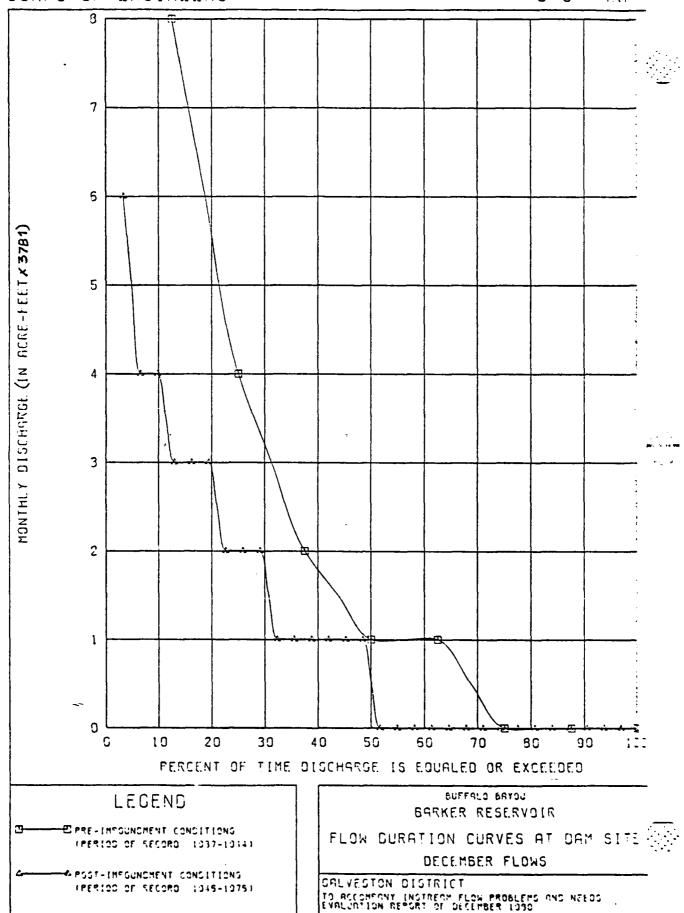
SST-IMPSUNCHENT CONSITIONS PERIOD OF RECORD 1945-19751 BARKER RESERVOIR

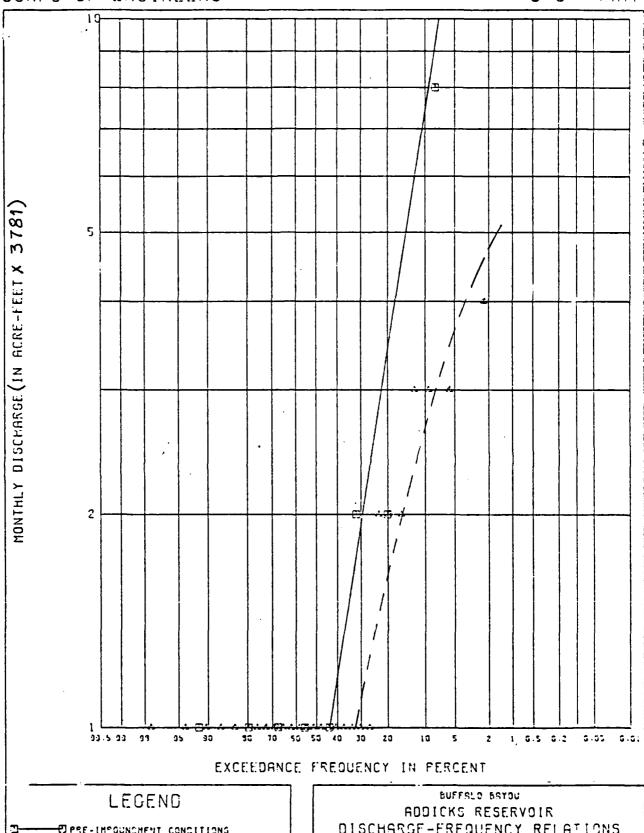
FLOW DURATION CURVES AT DAM SITE NOVEMBER FLOWS

TO ACCOMPANY INSTREAM FLOW PROBLEMS AND NEEDS EVALUATION REPORT OF DECEMBER 1990

FLATE 23

FLATE 2+

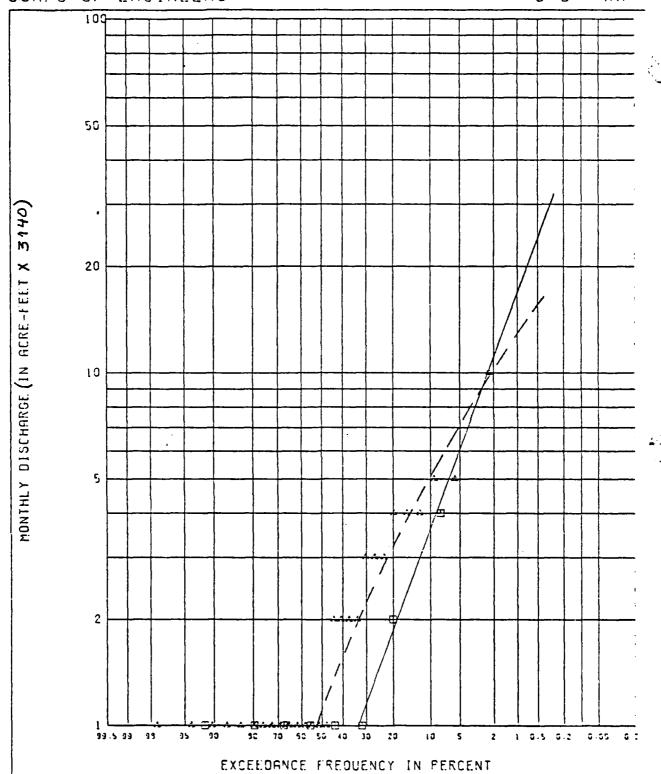




ED PRE-IMPOUNDHENT CONDITIONS TRESTOR OF SECOND 1037-10441

- POST-IMPOUNDMENT CONDITIONS (PERIOD OF RECORD 1049-1975) DISCHARGE-FREQUENCY RELATIONS AT DAM SITE JANUARY FLOWS

SALVESTON DISTRICT TO ACCOMPANY INSTREAM FLOW PROBLEMS AND NEEDS EVALUATION REPORT OF DECEMBER 1090 PLATE 1



PRE-IMPOUNDMENT CONDITIONS

(PERIOD OF RECORD 1937-1944)

- - - POST-IMPOUNDMENT CONDITIONS

(PERIOD OF RECORD 1040-1075)

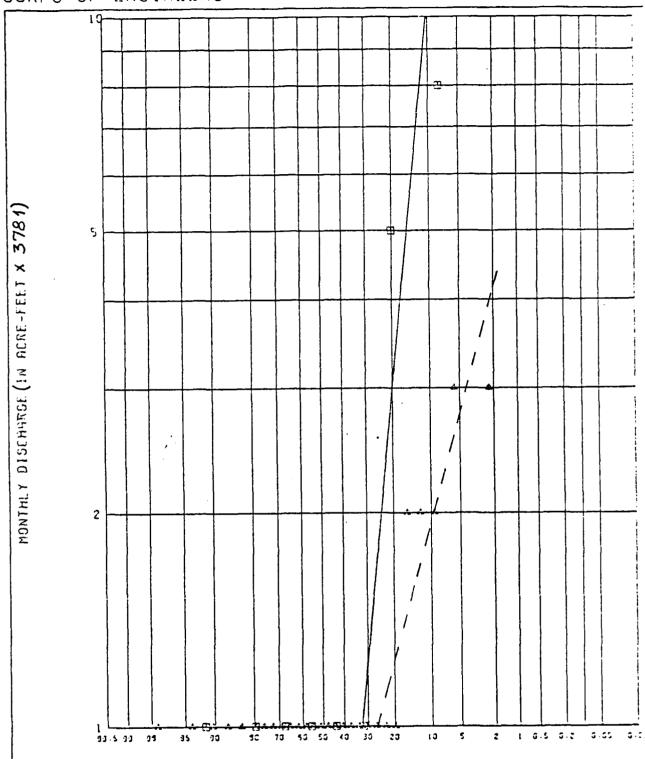
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ADDICKS RESERVOIR

DISCHARGE-FREQUENCY RELATIONS
AT DAM SITE

FEBRUARY FLOWS

GALVESTON DISTRICT
TO ASCOMENY INSTREM FLOW PROBLEMS AND NEEDS
EVALUATION REPORT OF DECEMBER 1999
PLATE Z



EXCEEDANCE FREQUENCY IN PERCENT

LEGEND

PRE-IMPOUNDMENT CONDITIONS

(PERIOD OF RECORD 1937-1944)

- - A POST-INFIGUNCHENT CONDITIONS

(PERIOD OF RECORD 1048-1075)

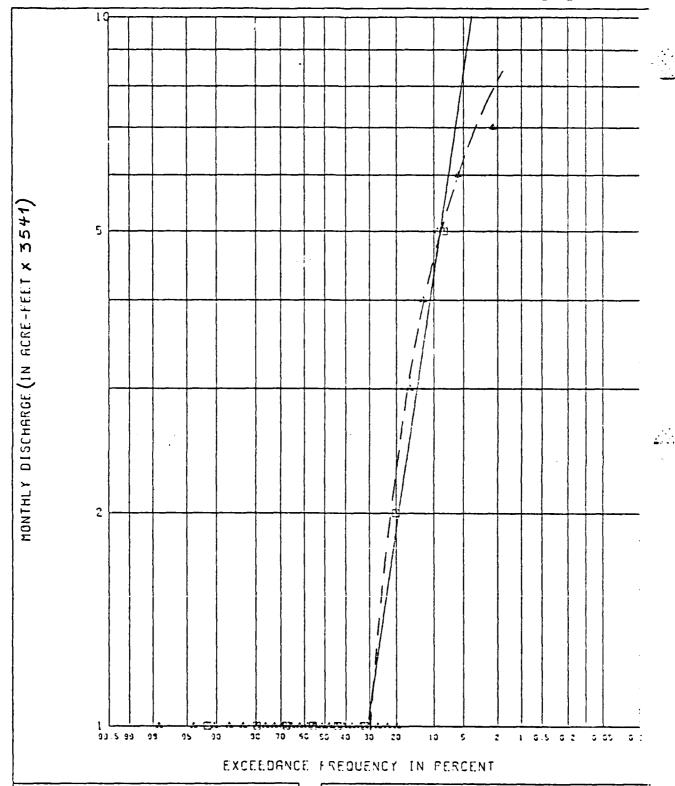
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ADDICKS RESERVOIR

DISCHARGE-FREQUENCY RELATIONS
AT DAM SITE

MARCH FLOWS

SALVESTON DISTRICT
TO ASCOMMANY INSTREMM FLOW PROBLEMS AND NEEDS
EVALUATION REPORT OF DECEMBER 1990
PLATE 3



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BPRE-IMPOUNDMENT CONDITIONS

(PERIOD OF RECORD 1037-1014)

 BUFFALO BAYOU

ADDICKS RESERVOIR

DISCHARGE-FREQUENCY RELATIONS

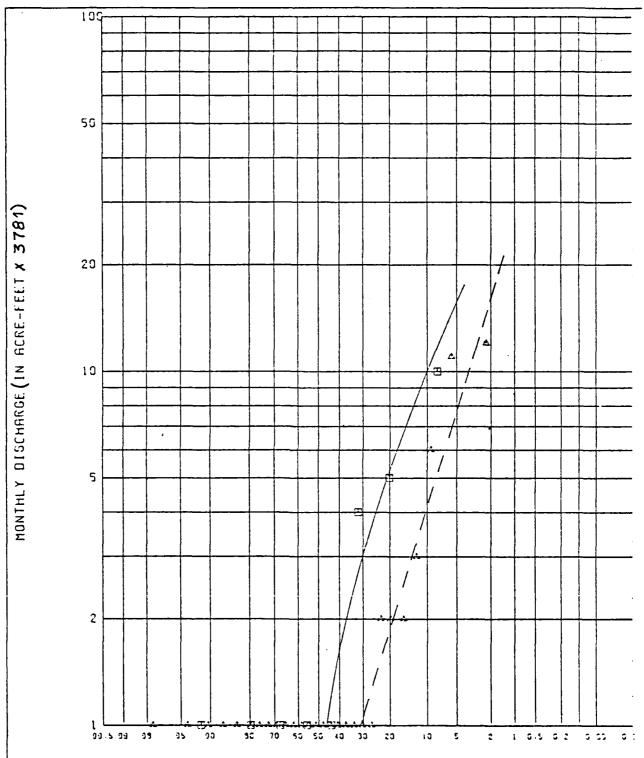
AT DAM SITE

APRIL FLOWS

GALVESTON CISTRICT
TO RECOMPANY INSTREAM FLOW PROBLEMS AND NEEDS
EVALUATION REPORT OF DESCRIBER 1090
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EXCEEDANCE FREQUENCY IN PERCENT

LEGEND

PRE-IMPOUNDMENT CONDITIONS

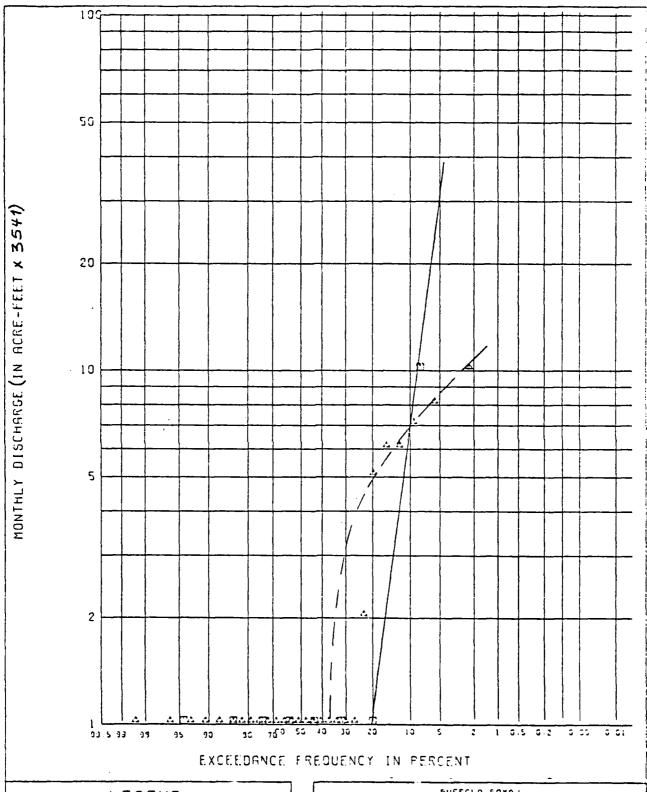
(PERIOD OF RECORD 1937-1944)

- - - POST-IMPOUNDMENT CONDITIONS

(PERIOD OF RECORD 1040-1075)

BUFFALO BAYOU
ADDICKS RESERVOIR
DISCHARGE-FREQUENCY RELATIONS
AT DAM SITE
MAY FLOWS

SALVESTON DISTRICT
TO ASCOMPANY INSTREMM FLOW PROBLEMS AND NEEDS EVALUATION REPORT OF DESCRIBER 1990
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PER-IMPOUNDMENT CONDITIONS
(PERIOD OF RECORD 1037-1044)

← ← ← POST-(MPOUNDMENT CONDITIONS (PERIOD OF RECORD 1919-1975)

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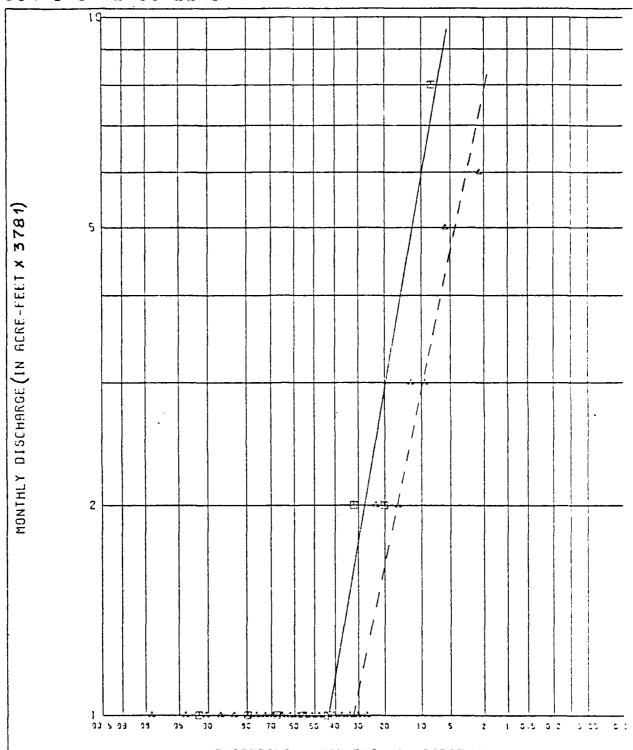
ADDICKS RESERVOIR

DISCHARGE-FREQUENCY RELATIONS

AT DAM SITE

JUNE FLOWS

SALVESTON BISTRICT
TO ACCOMPANY INSTREAM FLOW PROBLEMS AND NOEDS
EVALUATION REPORT OF DECEMBER 1990



EXCEEDANCE FREQUENCY IN PERCENT

LEGEND

PRE-INCOUNCERT CONDITIONS

(PERIOD OF RECORD 1037-1044)

- - A POST-IMPOUNDMENT CONCITIONS
(PERIOD OF RECORD 1949-1975)

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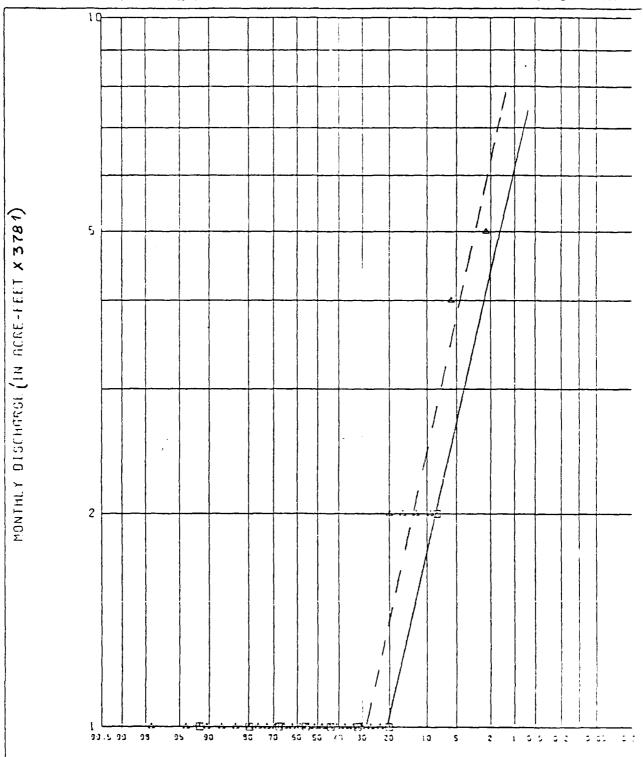
RODICKS RESERVOIR

DISCHARGE-FREQUENCY RELATIONS

AT DAM SITE

JULY FLOWS

SALVESTON DISTRICT
TO ACCOMPANY INSTREAM FLOW PROBLEMS AND NATEDS
EVALUATION REPORT OF DECEMBER 1990



EXCEEDANCE FREQUENCY IN PERCENT

- PRE-INFOUNCHENT CONCITIONS IPERIOD OF RECORD 1037-10:41

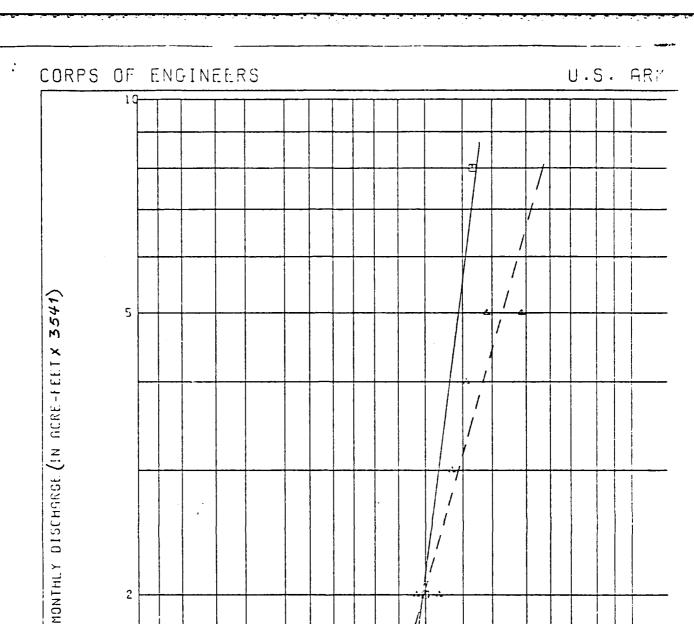
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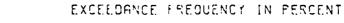
BUFFALO BAYOU ADDICKS RESERVOIR DISCHARGE-FREQUENCY RELATIONS AT DAM SITE AUGUST FLOWS

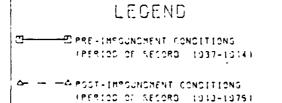
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TO ACCOMPANY INSTREAM FLOW PROBLEMS AND NEEDS EVALUATION REPORT OF DECEMBER 1090

PLATE &







BUFFALO BAYOU

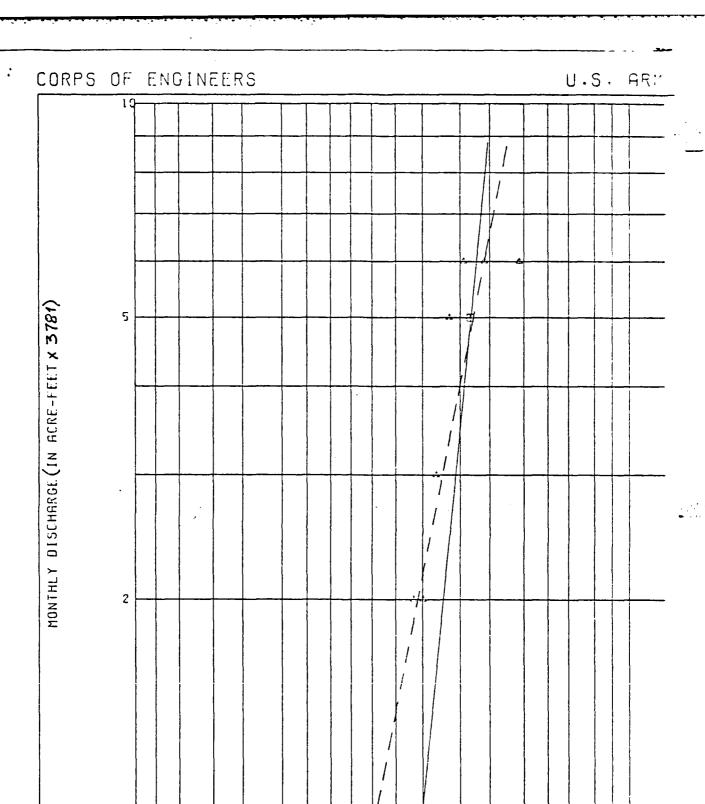
ADDICKS RESERVOIR

DISCHARGE-FREQUENCY RELATIONS

AT DAM SITE

SEFTEMBER FLOWS

GREVESTON SISTRICT
TO ACCOMPONY INSTREAM FLOW PROBLEMS AND NOLDS
EVALUATION REPORT OF DESCRIBER 1980



EXCEEDANCE FREQUENCY IN PERCENT

30 70 50 50 40 30

LEGEND

PRE-INFOUNDMENT CONDITIONS

(PERIOD OF RECORD 1937-1944)

— — ← POST-INFOUNDMENT CONDITIONS (PERIOD OF RECORD 1030-1075) BUFFRLO BRYOU

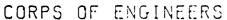
ADDICKS RESERVOIR

DISCHARGE-FREQUENCY RELATIONS

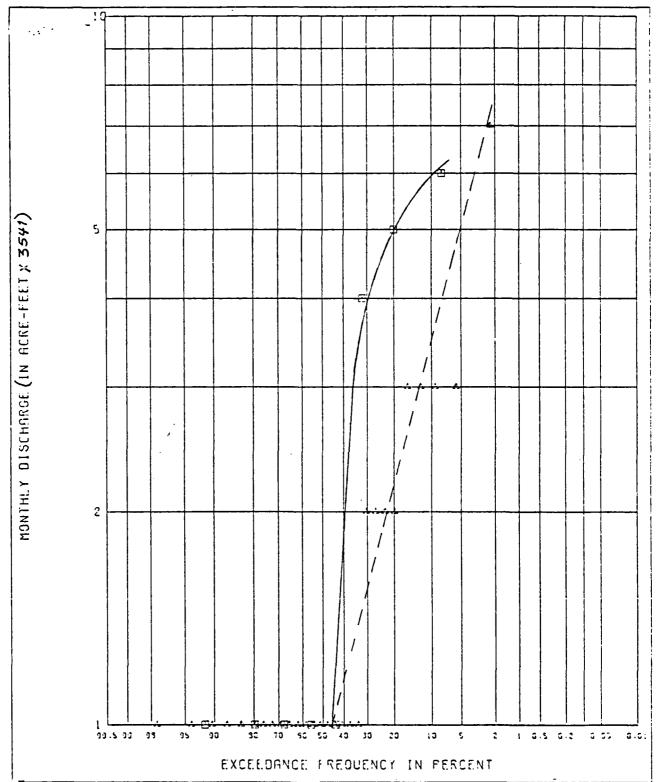
AT DAM SITE

OCTOBER FLOWS

GALVESTON CISTRICT
TO OSCOMPRAY INSTREME FLOW PROBLEMS AND NEEDS
EVALUATION REPORT OF DECEMBER 1990



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The state of record (1937-1944)

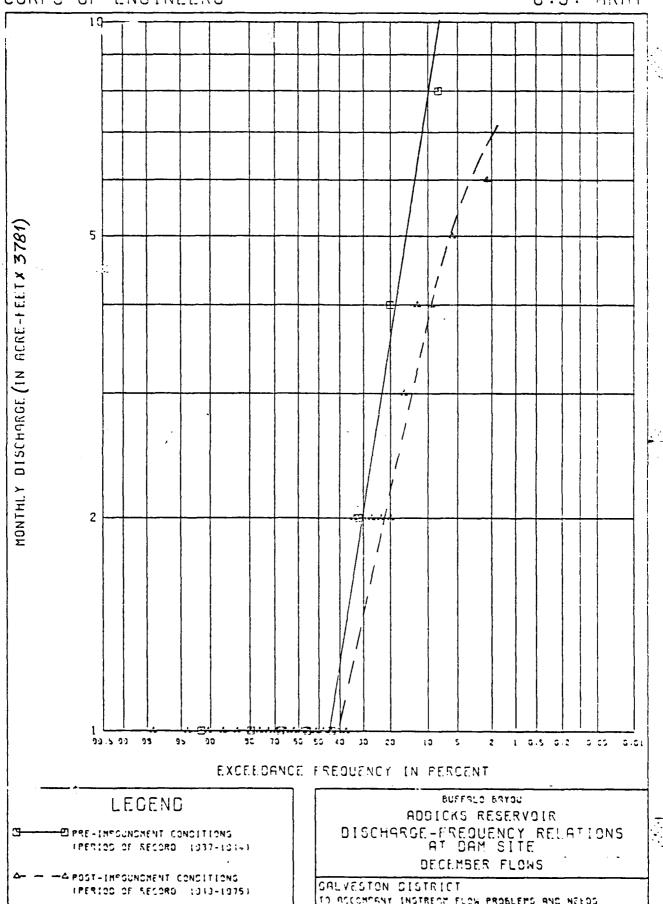
△ - -4 POST-INFOUNCHENT CONDITIONS

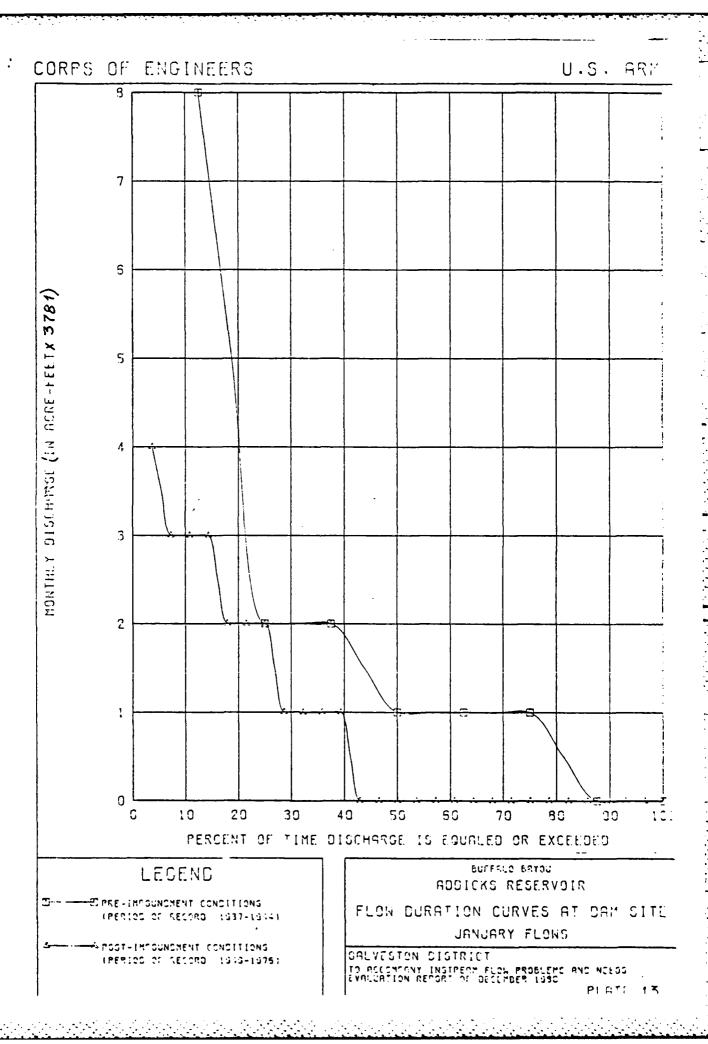
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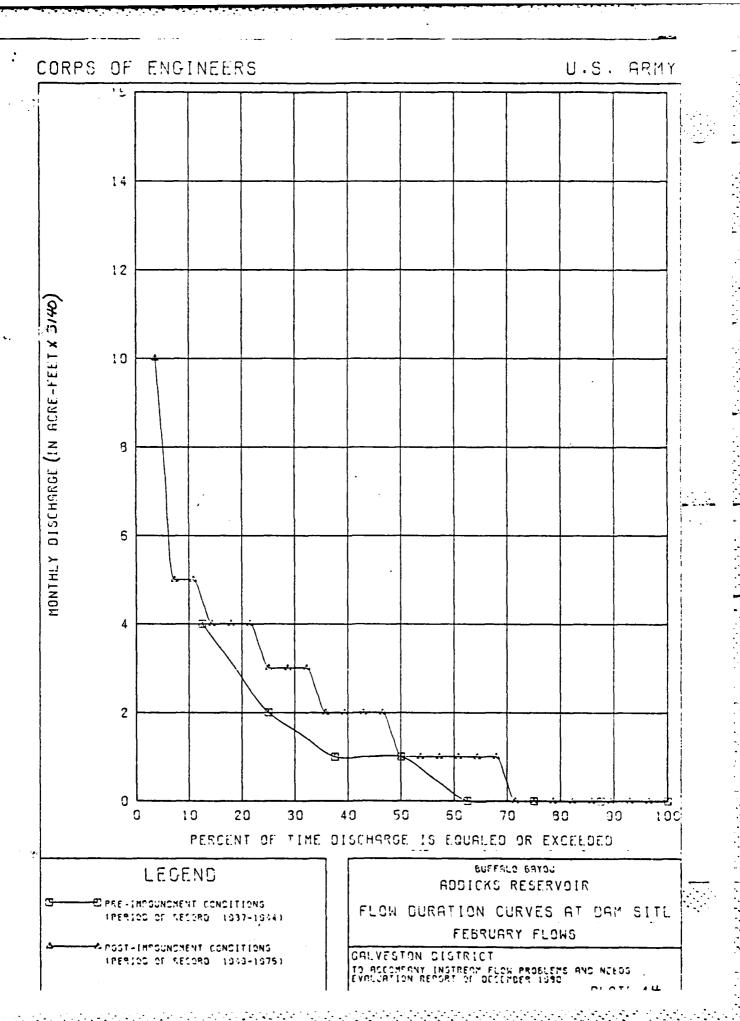
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ADDICKS RESERVOIR
DISCHARGE-FREQUENCY RELATIONS
AT DAM SITE
NOVEMBER FLOWS

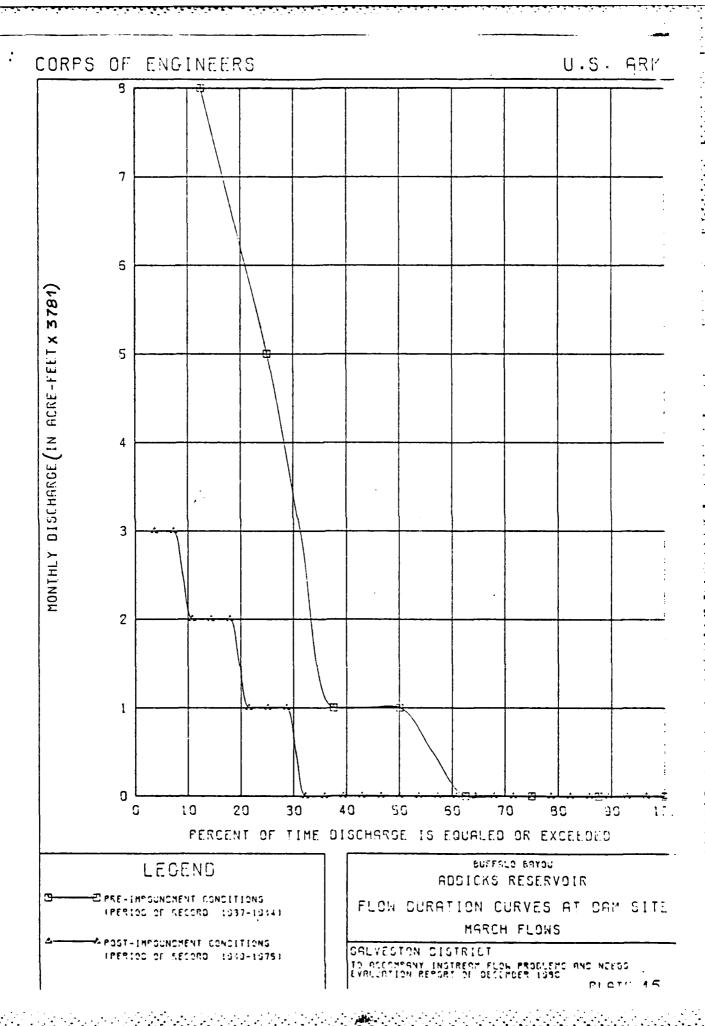
SALVESTON DISTRICT
TO ASCOMBANY INSTREAM FLOW PROBLEMS AND NEEDS EVALUATION REPORT OF DECEMBER 1990
PLOTE 44

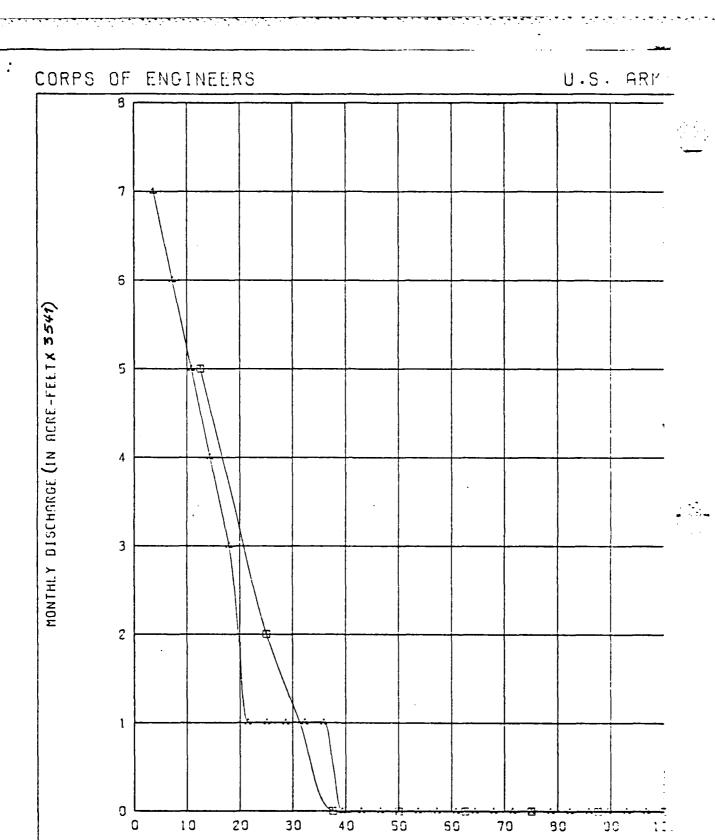
PLATE 12











DECEND

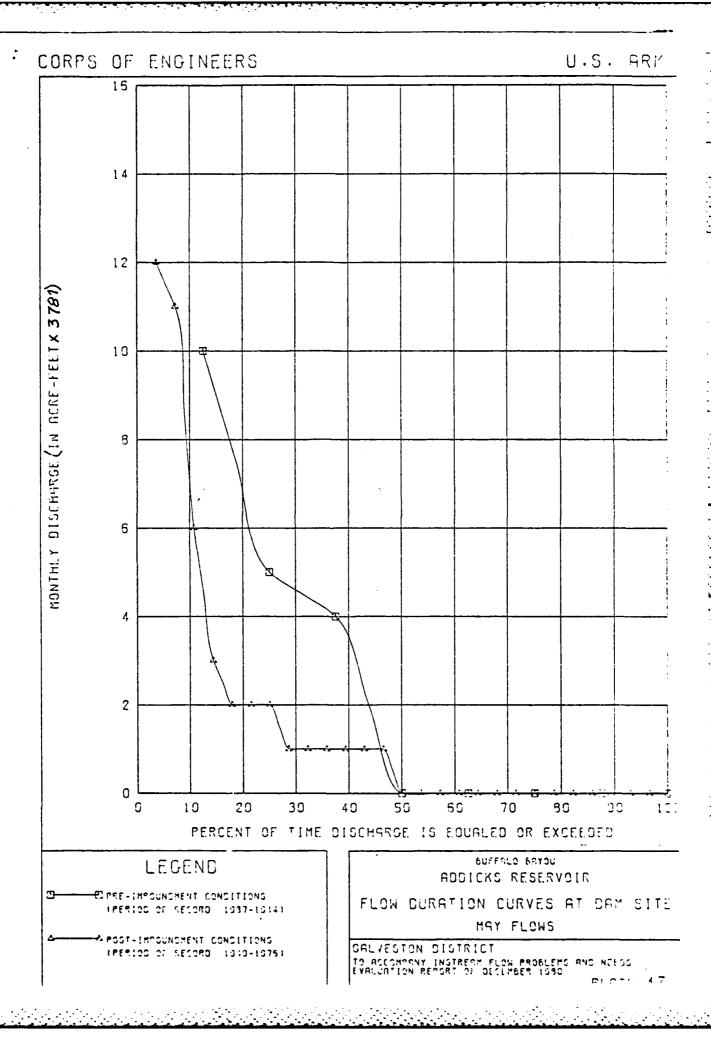
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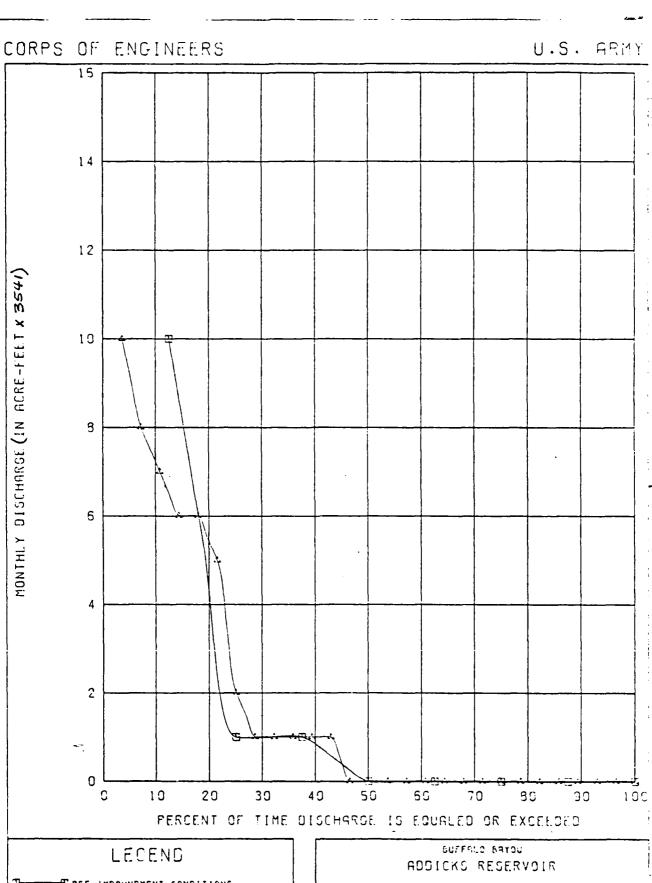
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(PERIOD OF SECOND 1934-1975)

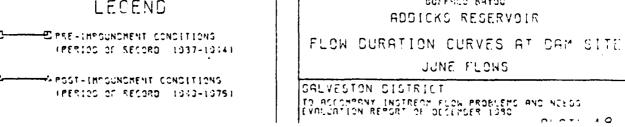
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ADDICKS RESERVOIR
FLOW GURATION CURVES AT DAM SITE
APRIL FLOWS

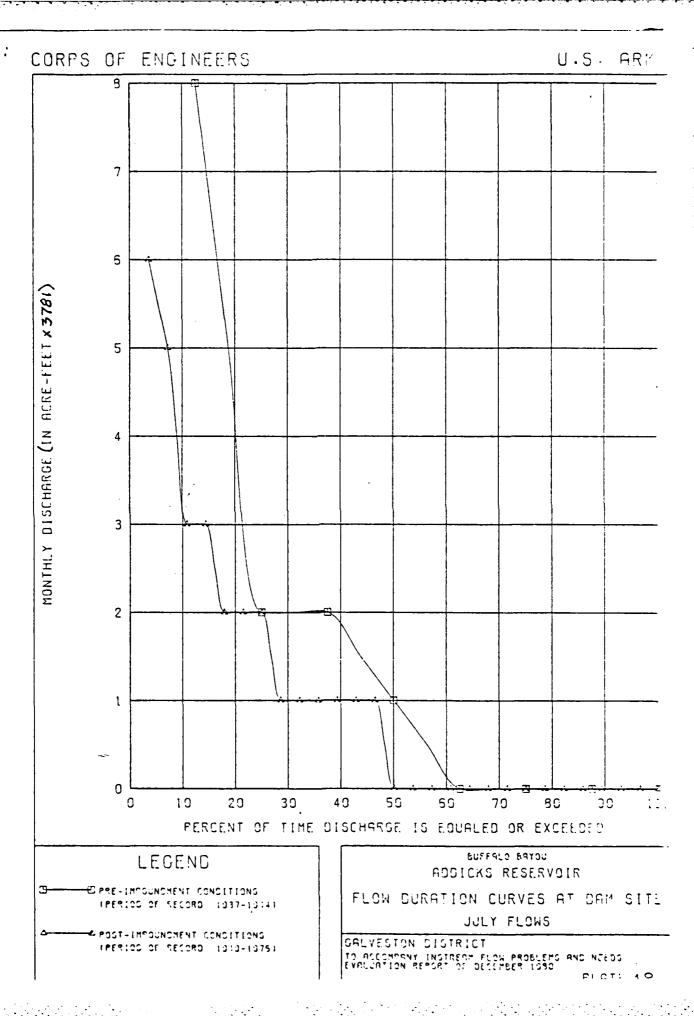
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TO ACCOMPANY INSTREM FLOW PROBLEMS AND NOEDS
EVALUATION REPORT OF DESIMBER 1990

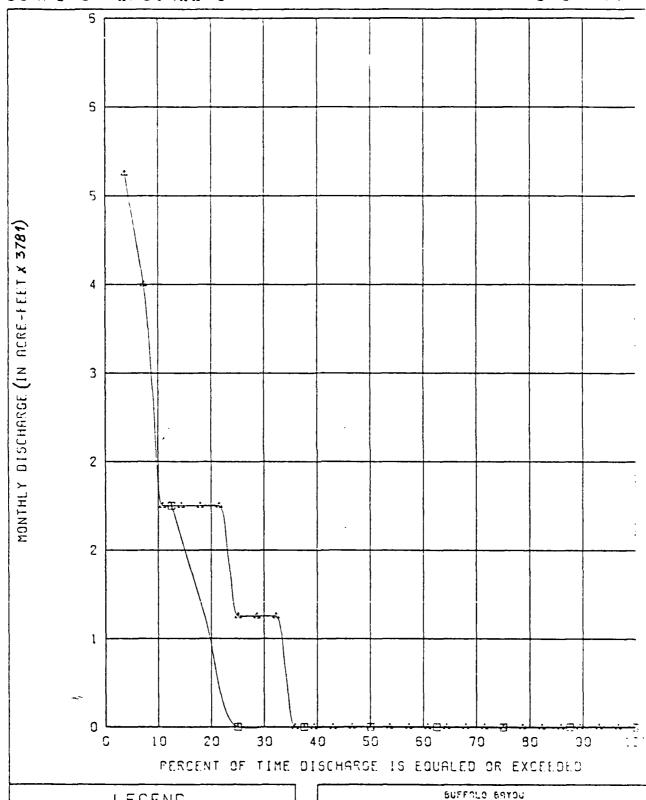
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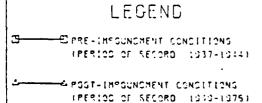










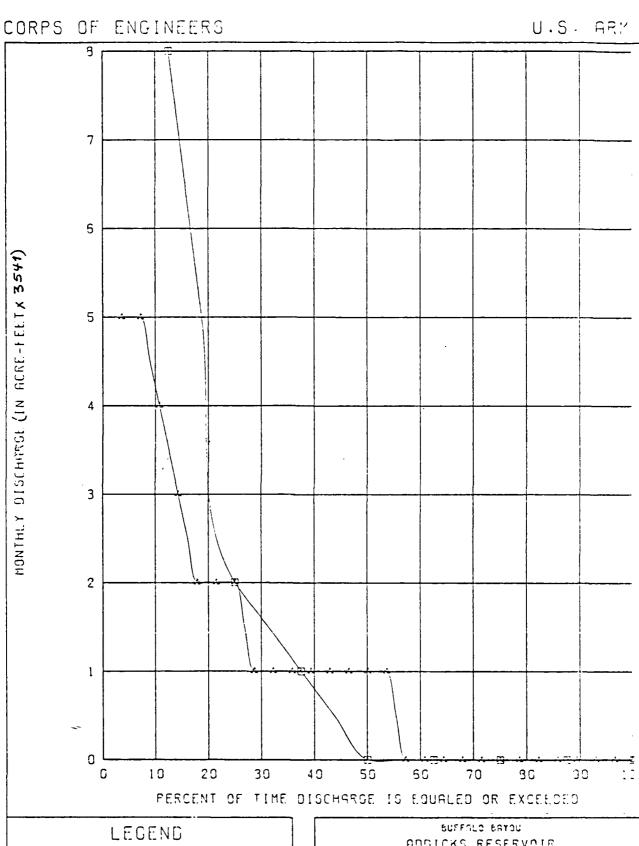


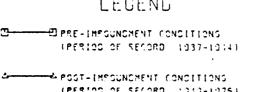
ADDICKS RESERVOIR
FLOW DURATION CURVES AT DAM SITE
AUGUST FLOWS
SALVESTON DISTRICT

ACCEPTON STOCKTOLD

O ACCOMPANY INSTREAM FLOW PROBLEMS AND NOEDS
VALUATION REPORT OF DECEMBER 1990

PLOTS



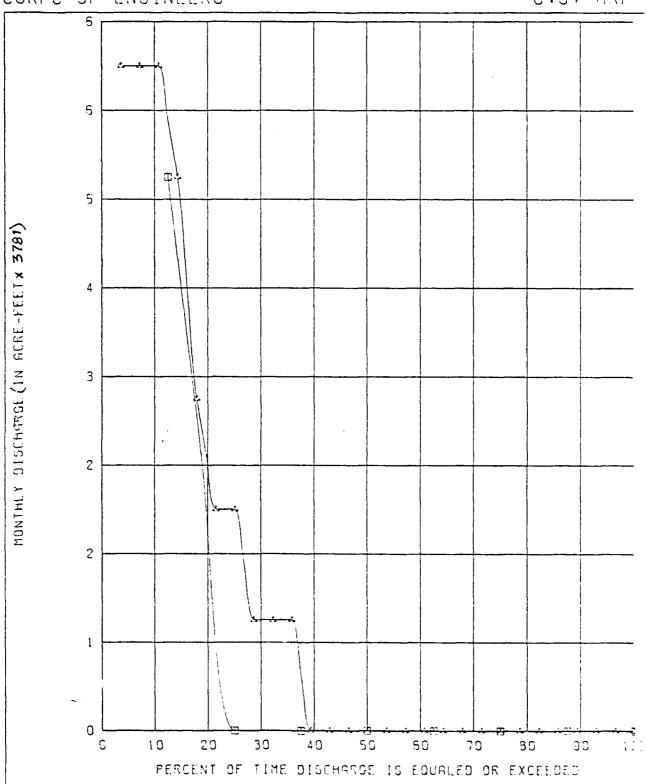


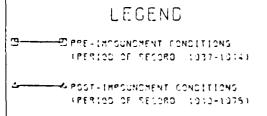
FLOW DURATION CURVES AT DAM SITE SEPTEMBER FLOWS

GALVESTON DISTRICT
TO ACCOMPANY INSTREAM FLOW PROBLEMS AND NOEDS
EVALUATION REPORT OF DECEMBER 1090
PLICITY



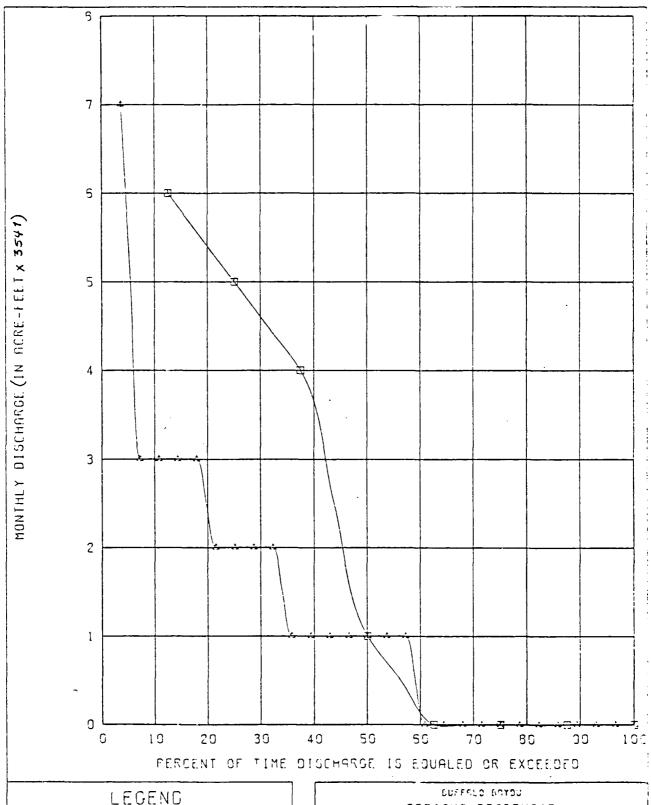
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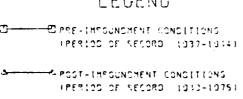




BUTFALO BATOU
ADDICKS RESERVOIR
FLOW DURHTION CURVES AT DAM SITE
OCTOBER FLOWS

SALVESTON DISTRICT
TO ASSOCIATE INSTREAM FLOW PROBLEMS AND NEEDS
EVALUATION REPORT OF DESEMBER 1990
PLATE 22





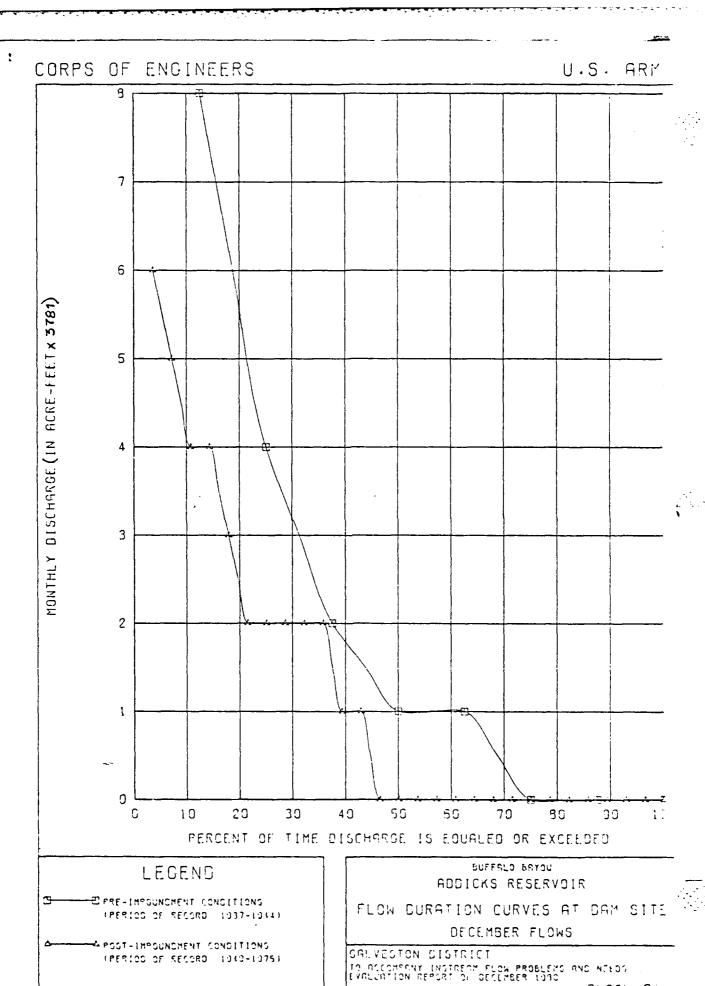
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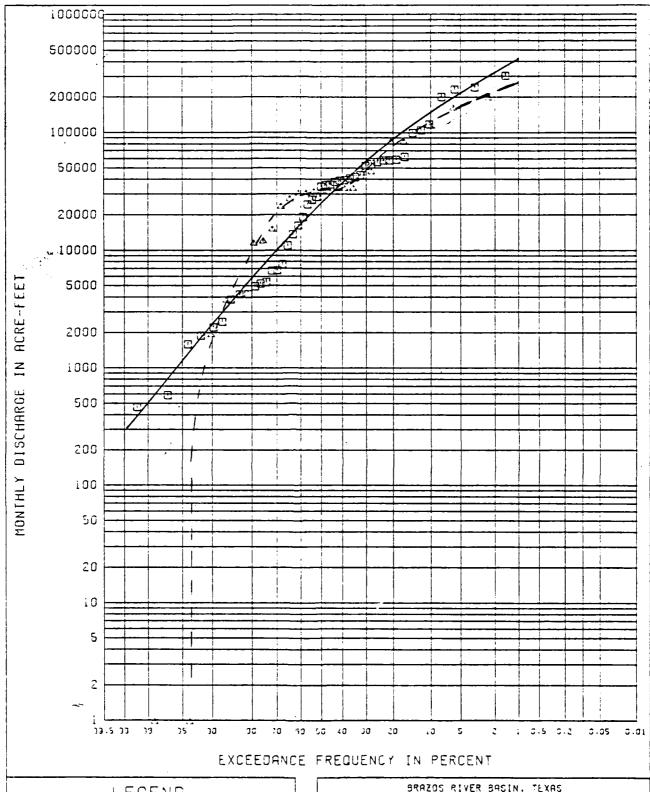
ADDICKS RESERVOIR

FLOW DURATION CURVES AT DAM SITE

NOVEMBER FLOWS

SALVESTON DISTRICT
TO ACCOMPANY INSTREM FLOW PROBLEMS AND NEEDS
EVALUATION REPORT OF DECEMBER 1090





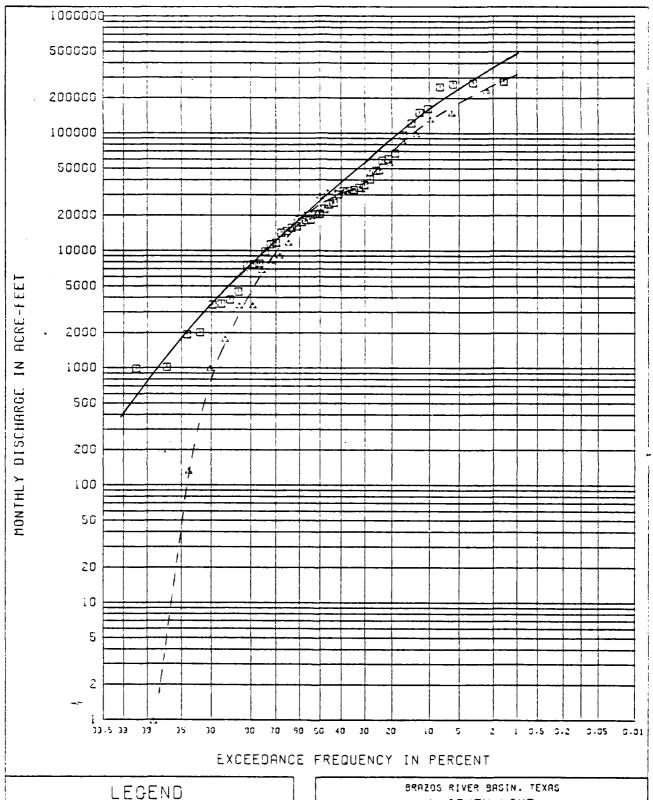
THE PRE-IMPOUNDMENT CONDITIONS
(PERIOD OF RECORD 1999-1943)

→ — → POST-IMPOUNDMENT CONDITIONS

(PERIOD OF RECORD 1952-1979)

SRAZOS RIVER BASIN. TEXAS
WHITNEY LAKE
DISCHARGE-FREQUENCY RELATIONS
AT DAM SITE
JANUARY FLOWS

U.S. ARMY ENGINEER DISTRICT. FORT WORTH
TO ACCOMPANY INSTREAM FLOW PROBLEMS AND NEEDS
EVALUATION REPORT OF DECEMBER 1990
PLATE:



THE PRE-IMPOUNDMENT CONCITIONS

(PERIOD OF RECORD 1999-1943)

> — → POST-IMPOUNCHENT CONDITIONS
(PERIOD OF RECORD 1952-1979)

BRAZOS RIVER BASIN. TEXAS

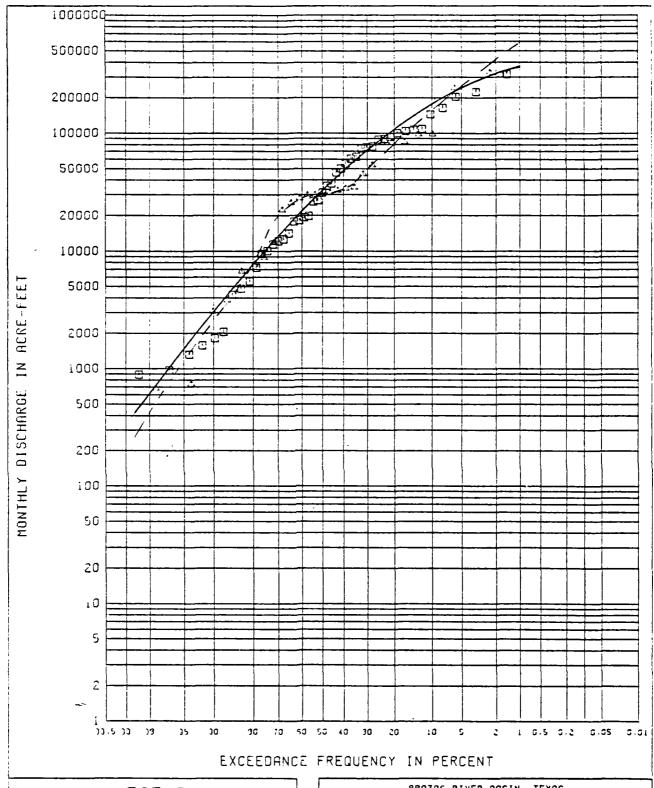
WHITNEY LAKE

DISCHARGE-FREQUENCY RELATIONS

AT DAM SITE

FEBRUARY FLOWS

U.S. ARMY ENGINEER DISTRICT. FORT WORTH
TO ACCOMPANY INSTREAM FLOW PROBLEMS AND NEEDS
EVALUATION REPORT OF DECEMBER 1390
PLATE 2



☐ → → ☑ PRE-IMPOUNDMENT CONGITIONS
(PERIOD OF RECORD 1999-1943)

- - - POST-IMPOUNDMENT CONDITIONS (PERIOD OF RECORD 1952-1978)

BRAZOS RIVER BASIN. TEXAS

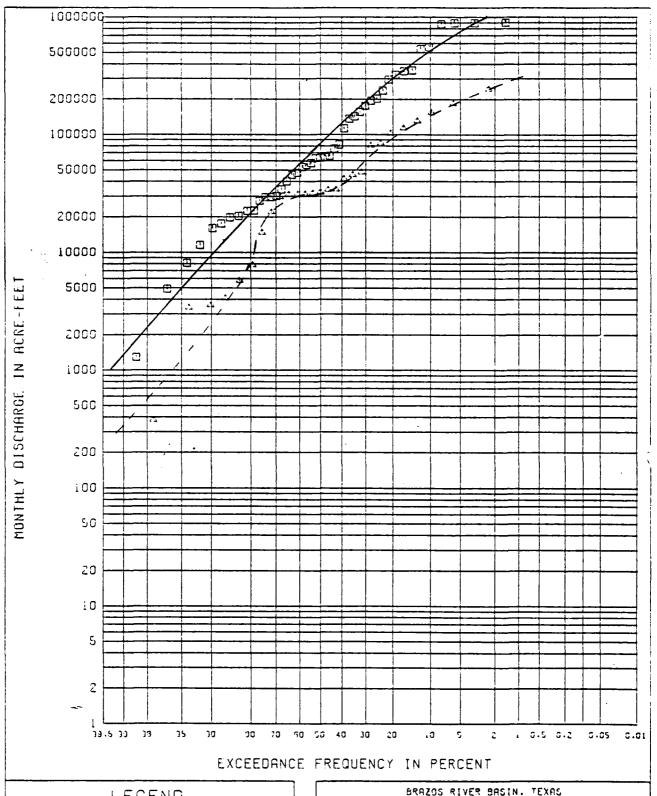
WHITNEY LAKE

DISCHARGE-FREQUENCY RELATIONS

AT DAM SITE

MARCH FLOWS

U.S. ARMY ENGINEER DISTRICT. FORT WORTH
TO ACCOMPANY INSTREAM FLOW PROBLEMS AND NEEDS
EVALUATION REPORT OF DECEMBER 1980
PLATE 5

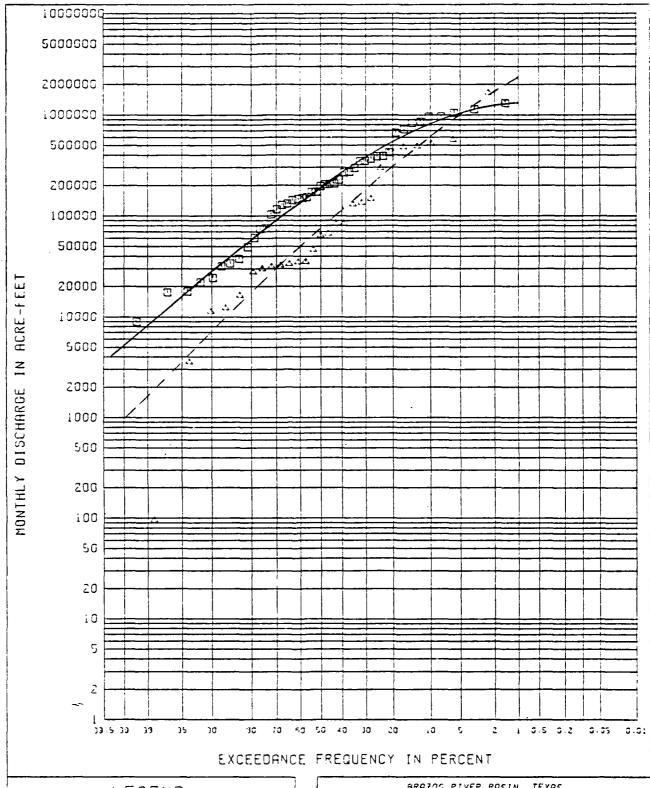


- PRE-IMPOUNDMENT CONDITIONS (PERIOD OF RECORD 1899-1943)

- POST-IMPOUNDMENT CONDITIONS (PERIOD OF RECORD 1952-1979)

BRAZOS RIVER BASIN. TEXAS WHITNEY LAKE DISCHARGE-FREQUENCY RELATIONS AT DAM SITE APRIL FLOWS

U.S. ARMY ENGINEER DISTRICT, FORT WORTH TO ACCOMPANY INSTREST FLOW PROBLETS AND NEEDS EVALUATION REPORT OF DECEMBER 1980





PRE-IMPOUNDMENT CONDITIONS

PRESIDE OF RECORD 1999-1943)

- - - POST-IMPOUNDMENT CONDITIONS

(PERIOD OF RECORD | 1952-1979)

BRAZOS RIVER BASIN. TEXAS

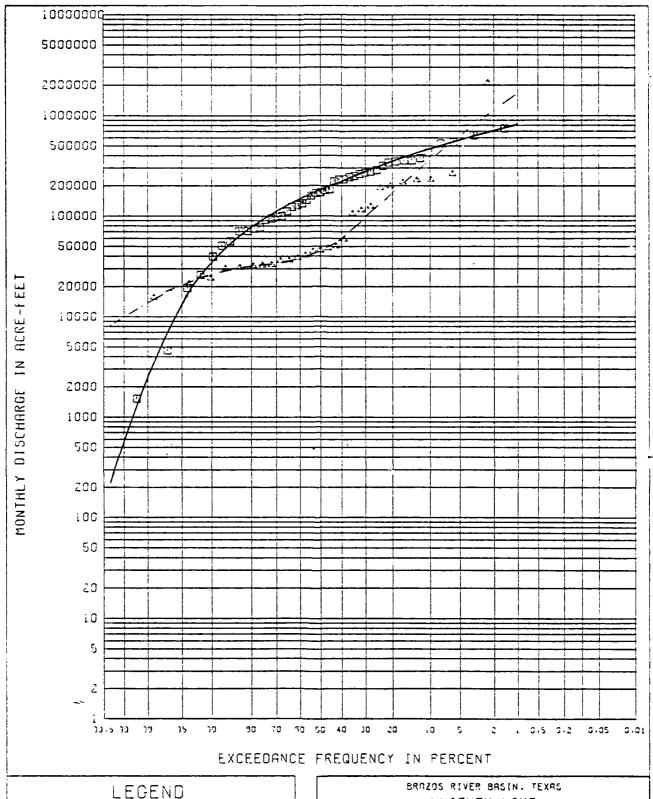
WHITNEY LAKE

DISCHARGE-FREQUENCY RELATIONS

AT DAM SITE

MAY FLOWS

U.S. ARMY ENGINEER DISTRICT, FORT WORTH
TO ASCEMBANY INSTREM FLOW PROBLEMS AND NEEDS
EVALUATION REPORT OF DECEMBER 1990
PLATE 5

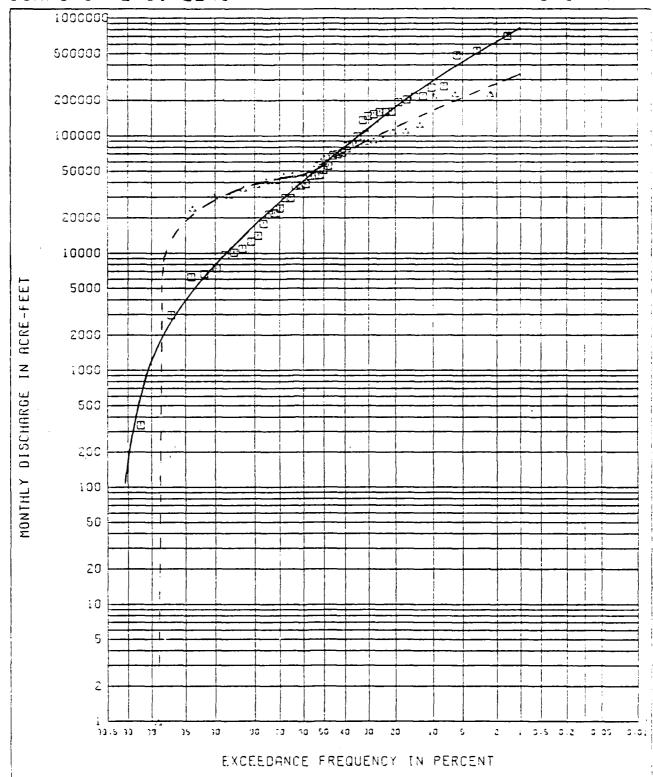


- PRE-IMPOUNDMENT CONDITIONS (PERIOD OF RECORD 1999-1943)

- POST-IMPOUNDMENT CONDITIONS (PERIOD OF RECORD 1092-1079)

WHITNEY LAKE DISCHARGE-FREQUENCY RELATIONS AT DAM SITE JUNE FLOWS

U.S. ARMY ENGINEER DISTRICT. FORT WORTH TO ACCOMPANY INSTREAM FLOW PROBLEMS AND NEEDS EVALUATION REPORT OF DECEMBER 1990 PLATE 6



PRE-IMPOUNDMENT CONDITIONS

(PERIOD OF RECORD 1300-1343)

- - - POST-IMPOUNDMENT CONDITIONS (PERIOD OF RECORD 1392-1379)

SRAZOS RIVER BASIN. TEXAS

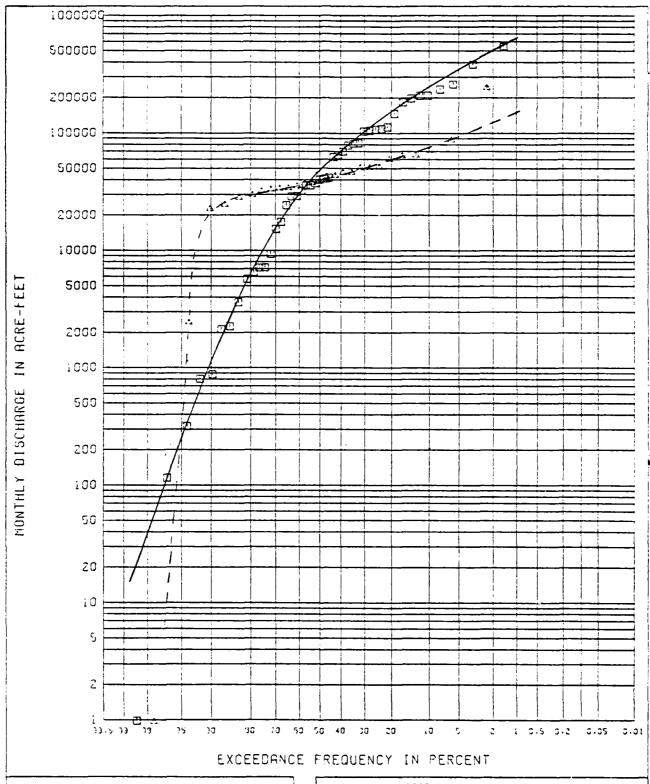
WHITNEY LAKE

DISCHARGE-FREQUENCY RELATIONS

AT DAM SITE

JULY FLOWS

U.S. ARMY ENGINEER DISTRICT, FORT WORTH TO ACCOMPANY INSTREM FLOW PROBLEMS AND NEEDS EVALUATION REPORT OF DECEMBER 1330 PLATE 7



PRE-IMPOUNDMENT CONDITIONS
(PERIOD OF RECORD (1999-1943)

POST-IMPOUNDMENT CONDITIONS
(PERIOD OF RECORD 1952-1979)

BRAZOS RIVER BASIN. TEXAS

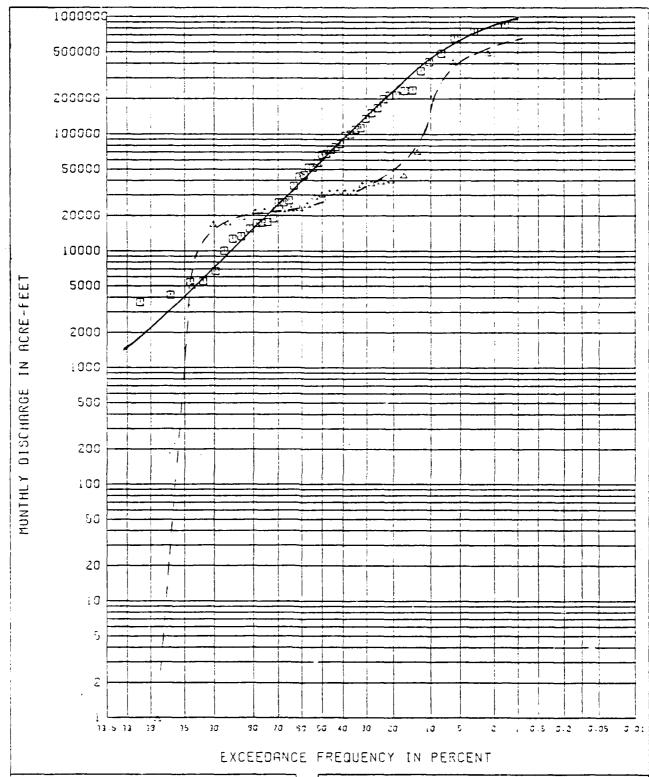
WHITNEY LAKE

DISCHARGE-FREQUENCY RELATIONS

AT DAM SITE

AUGUST FLOWS

U.S. ARMY ENGINEER DISTRICT. FORT WORTH TO ACCOMPANY INSTREAM FLOW PROBLEMS AND NEEDS EVALUATION REPORT OF DECEMBER 1995 PLATE 8

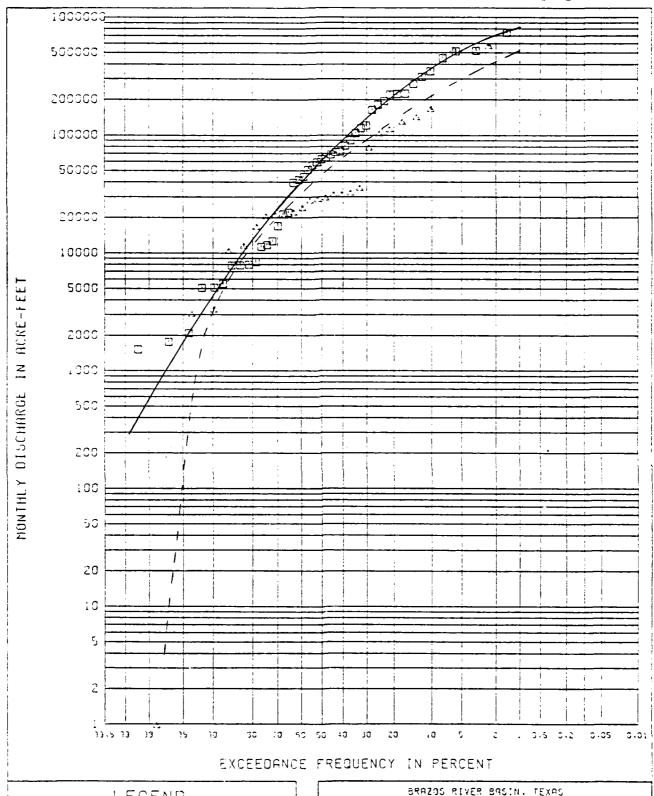


3---- € PRE-IMPOUNDMENT CONDITIONS (PERIOD OF RECORD 1999-1343)

>- -- POST-[MPGUNGMENT CONDITIONS (PERIOD OF RECORD 1952-1979)

BRAZOS RIVER BASIN. TEXAS
WHITNEY LAKE
DISCHARGE-FREQUENCY RELATIONS
AT DAM SITE
SEPTEMBER FLOWS

U.S. ARMY ENGINEER DISTRICT, FORT WORTH TO ACCOMPANY INSTREAM FLOW PROBLEMS AND NEEDS EVALUATION REPORT OF DECEMBER 1390

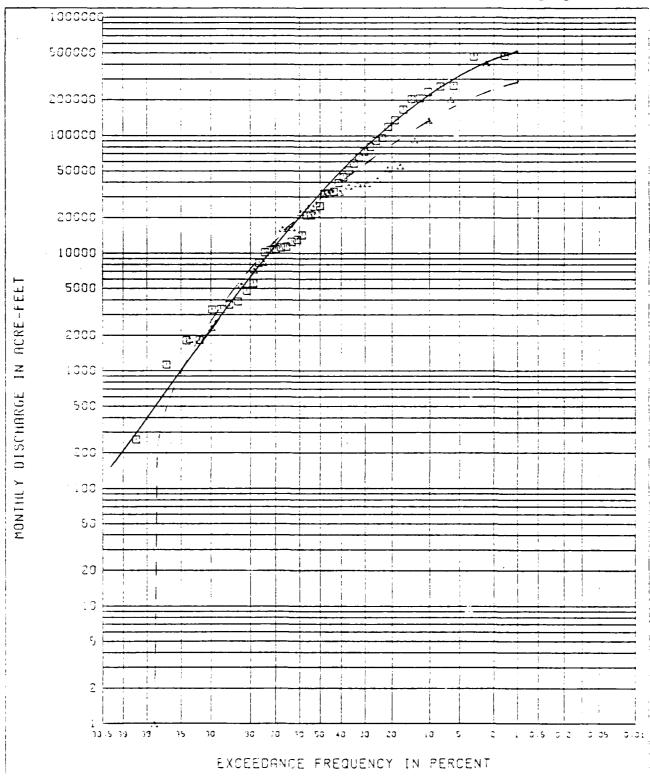


-E PRE-IMPOUNDMENT CONDITIONS (PERIOD OF RECORD 1300-1343)

-A POST-IMPOUNDMENT CONCITIONS (PERIOD OF RECORD 1952-1973)

BRAZOS RIVER BASIN. TEXAS WHITNEY LAKE DISCHARGE-FREQUENCY RELATIONS AT DAM SITE OCTOBER FLOWS

U.S. ARMY ENGINEER DISTRICT, FORT WORTH TO ACCOMPANY INSTREAM FLOW PROBLEMS AND NEEDS EVALUATION REPORT OF DECEMBER 1980 PLATE 10

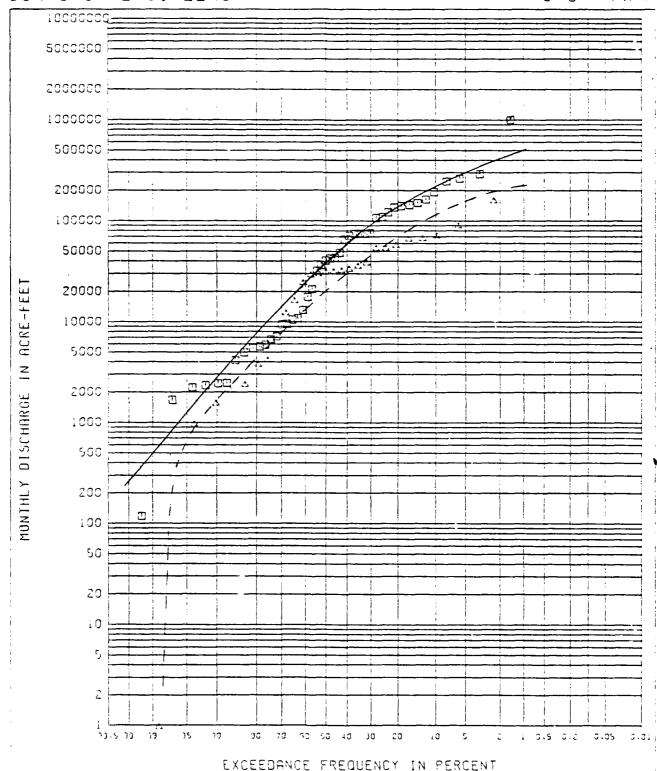


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 58920S RIVER SASIN, TEXAS
WHITNEY LAKE
DISCHARGE-FREQUENCY RELATIONS
AT DAM SITE

NOVEMBER FLOWS

U.S. ARMY ENGINEER DISTRICT, FORT WORTH TO ACCOMPANY INSTREAM FLOW PROBLEMS AND NEEDS EVALUATION REPORT OF DECEMBER 1390 PLATE 11



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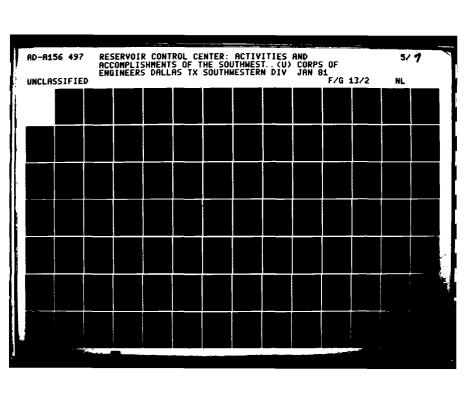
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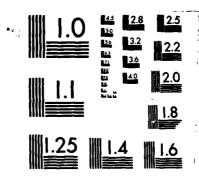
DISCHARGE-FREQUENCY RELATIONS

AT DAM SITE

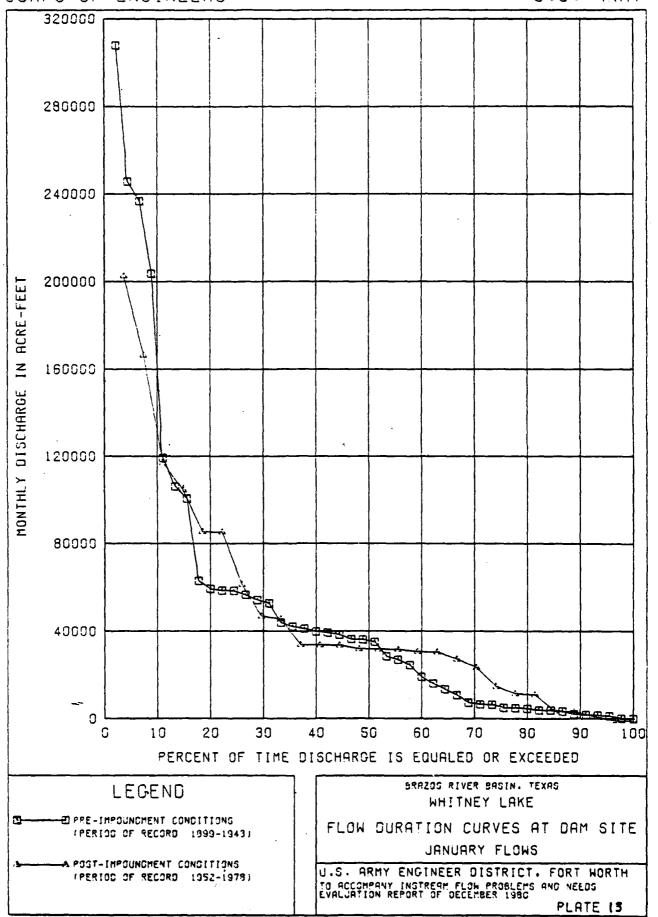
DECEMBER FLOWS

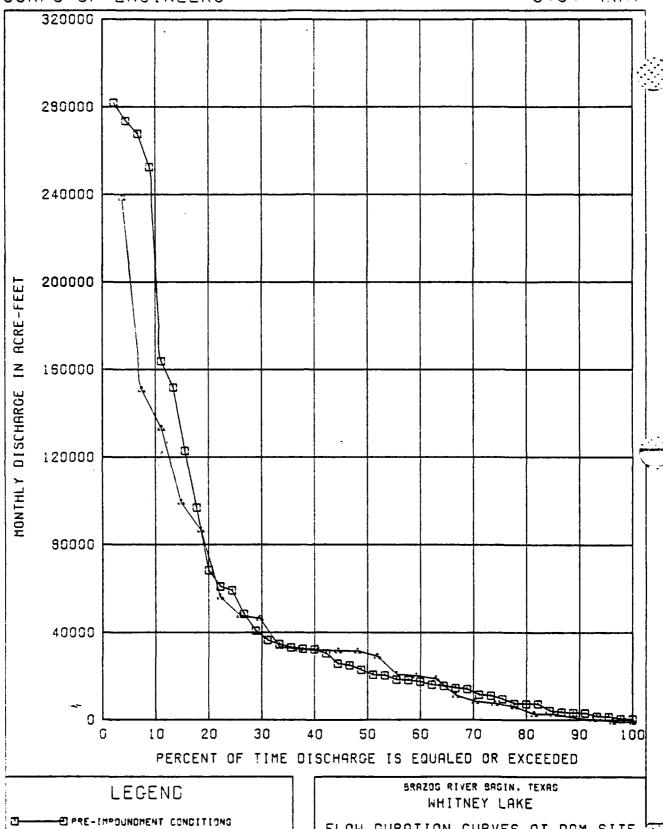
U.S. ARMY ENGINEER DISTRICT. FORT WORTH TO ACCOMPANY INSTREAM FLOW PROBLEMS AND NEEDS EVALUATION REPORT OF DECEMBER 1330 PLATE 12





MICROCOPY RESOLUTION TEST CHART
NATIONAL BUREAU OF STANDARDS-1963-A





POST-IMPOUNDMENT CONDITIONS

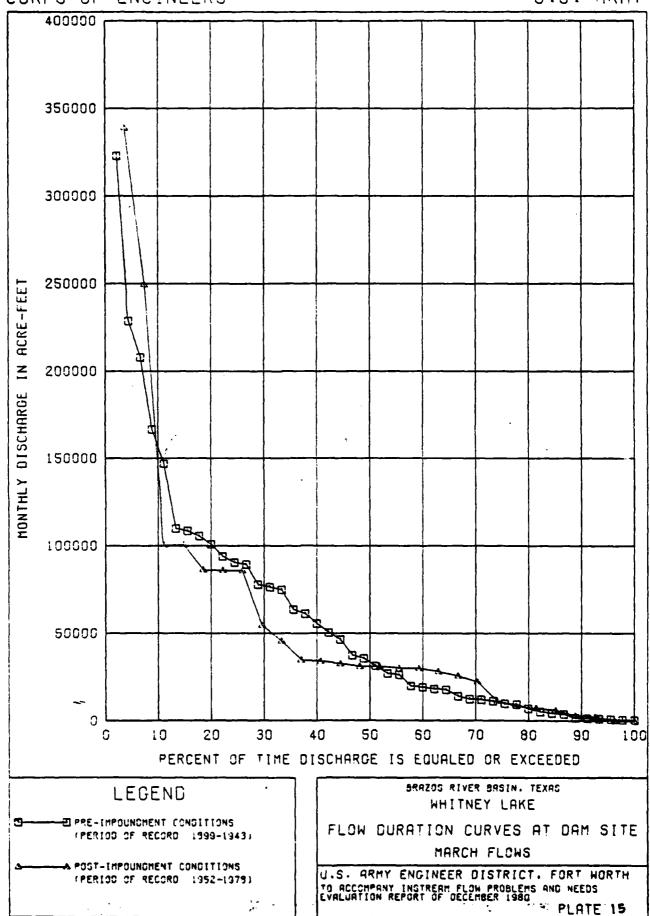
(PERIOD OF RECORD 1999-1943)

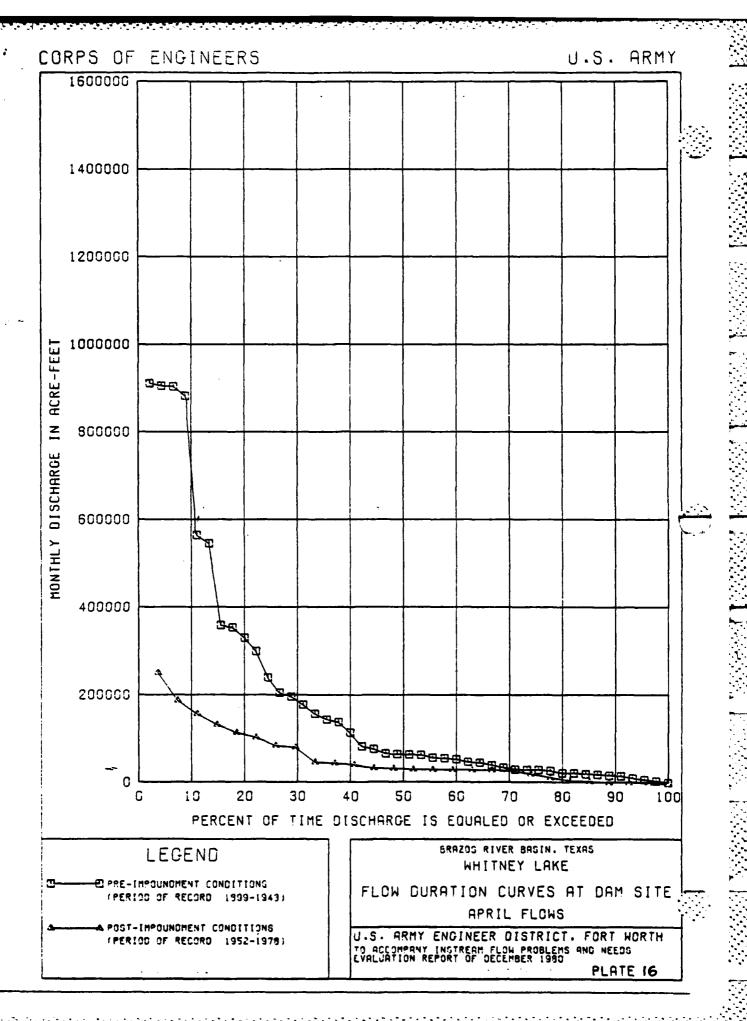
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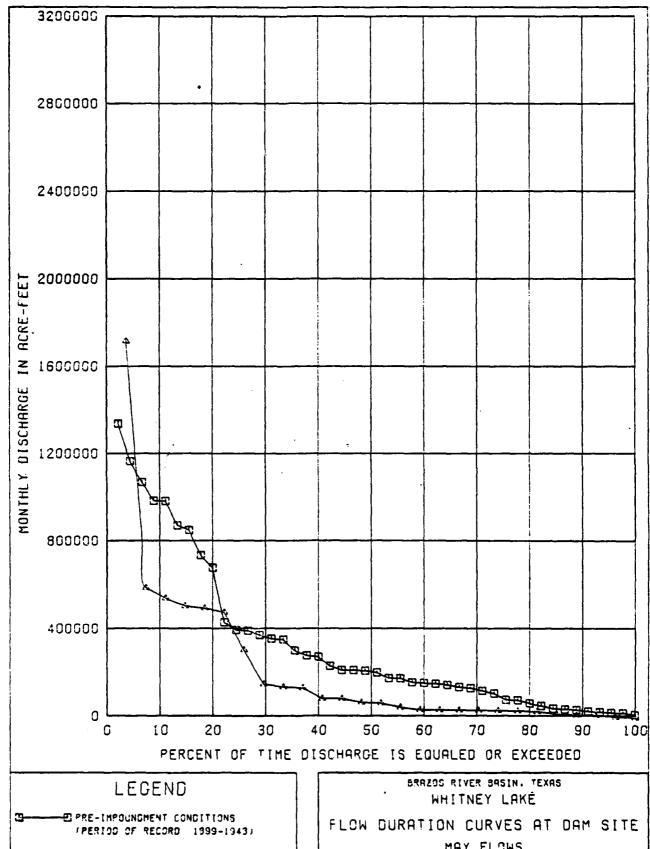
(PERIOD OF RECORD 1952-1979)

FLOW GURATION CURVES AT DAM SITE FEBRUARY FLOWS

U.S. ARMY ENGINEER DISTRICT, FORT WORTH
TO ACCOMPANY INSTREM FLOH PROBLEMS AND NEEDS
EVALUATION REPORT OF DECEMBER 1990
PLATE 14





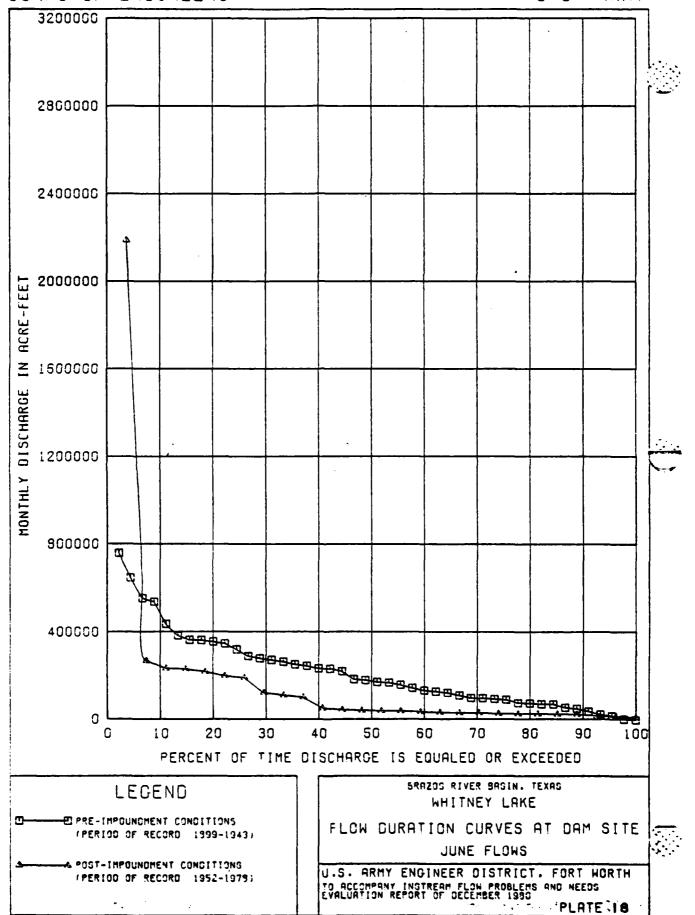


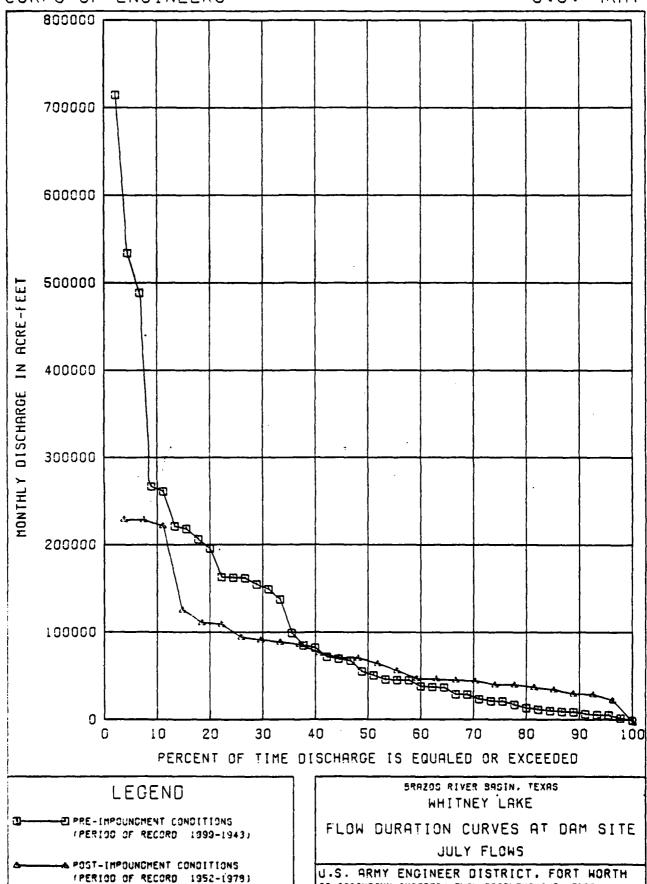
& POST-IMPOUNDMENT CONDITIONS IPERIOD OF RECORD 1952-1979) MAY FLOWS

U.S. ARMY ENGINEER DISTRICT, FORT WORTH TO ACCOMPANY INSTREM FLOW PROBLEMS AND NEEDS EVALUATION REPORT OF DECEMBER 1980 · PLATE 17



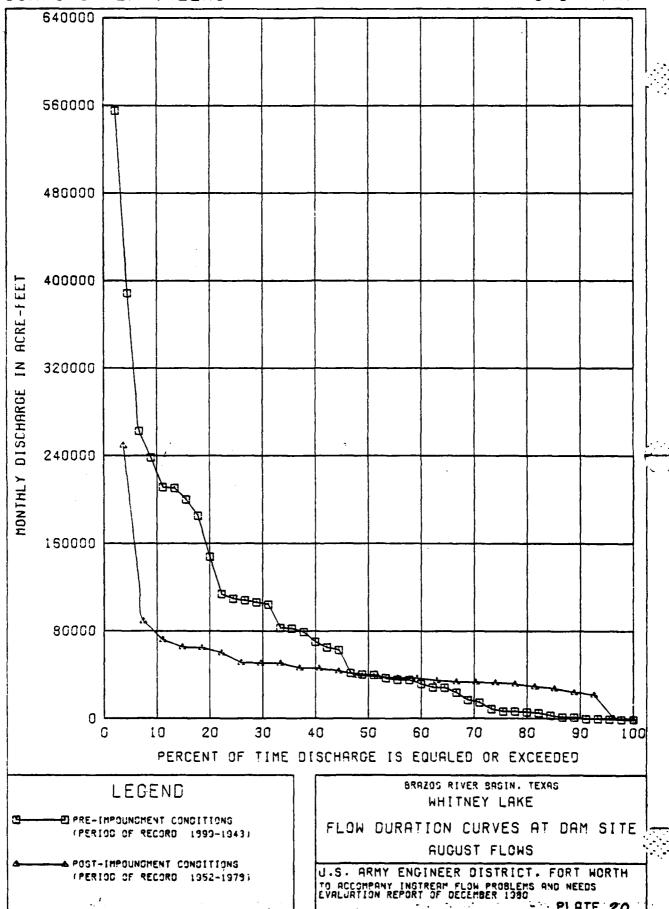
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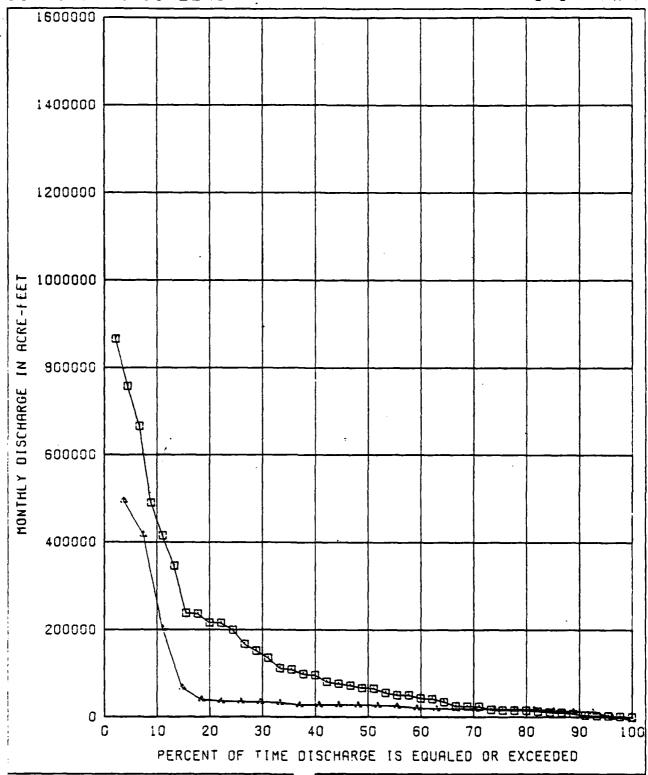




TO ACCOMPANY INSTREAM FLOW PROBLEMS AND NEEDS LYALUATION REPORT OF DECEMBER 1990 PLATE

> PLATE 19





PRE-IMPOUNDMENT CONDITIONS
(PERIOD OF RECORD 1899-1943)

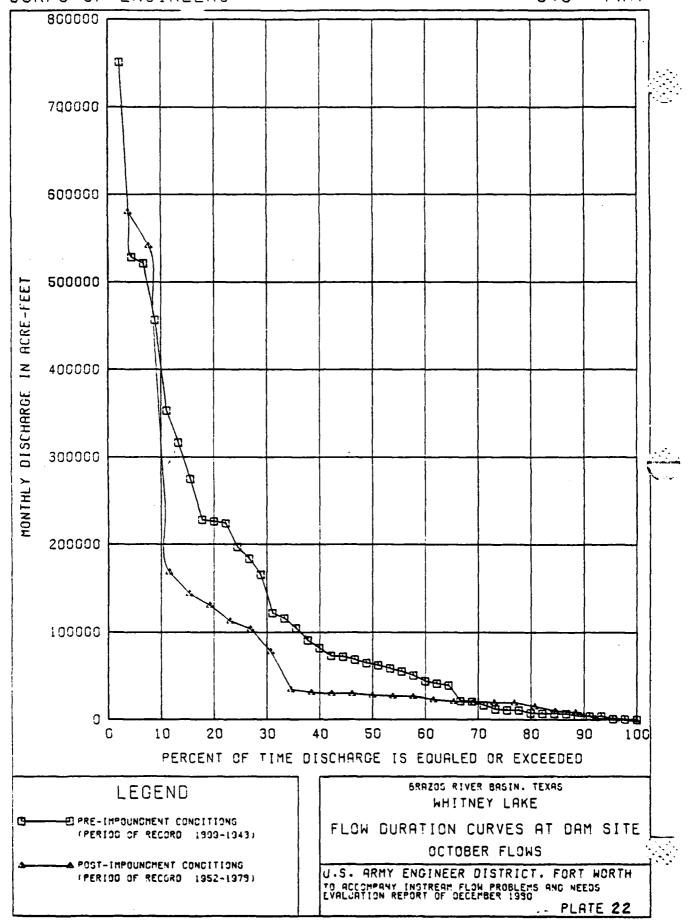
POST-IMPOUNDMENT CONDITIONS (PERIOD OF RECORD 1952-1979)

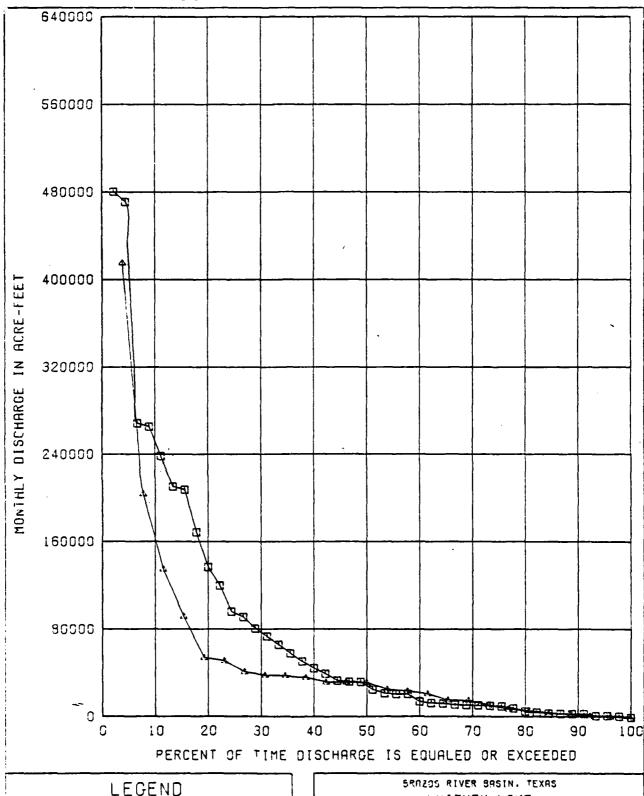
STAZOS RIVER BASIN. TEXAS WHITNEY LAKE

FLOW DURATION CURVES AT DAM SITE SEPTEMBER FLOWS

U.S. ARMY ENGINEER DISTRICT. FORT WORTH TO ACCOMPANY INSTREM FLOW PROBLEMS AND NEEDS EVALUATION REPORT OF DECEMBER 1980

17 PLATE 21

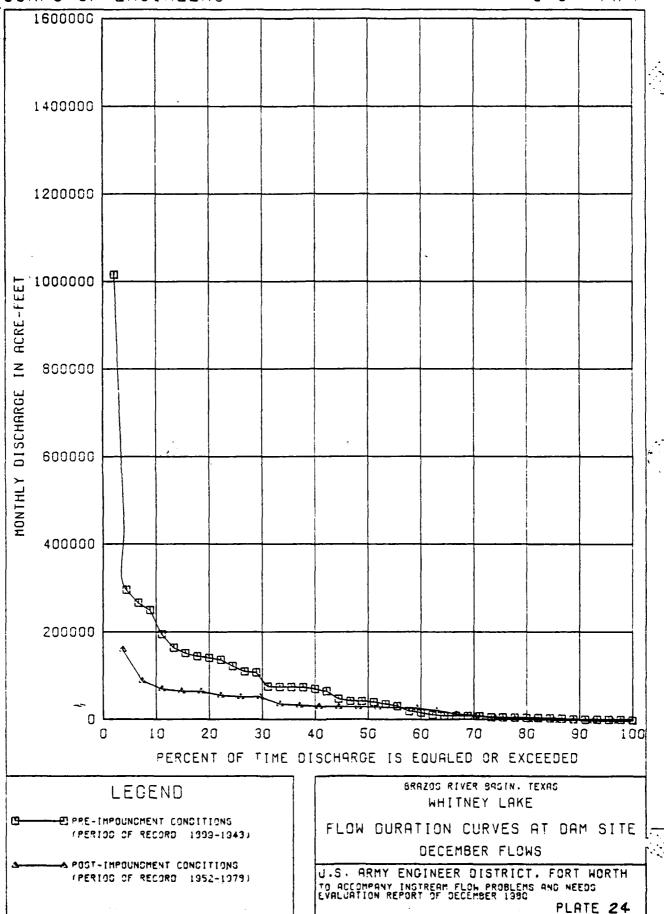


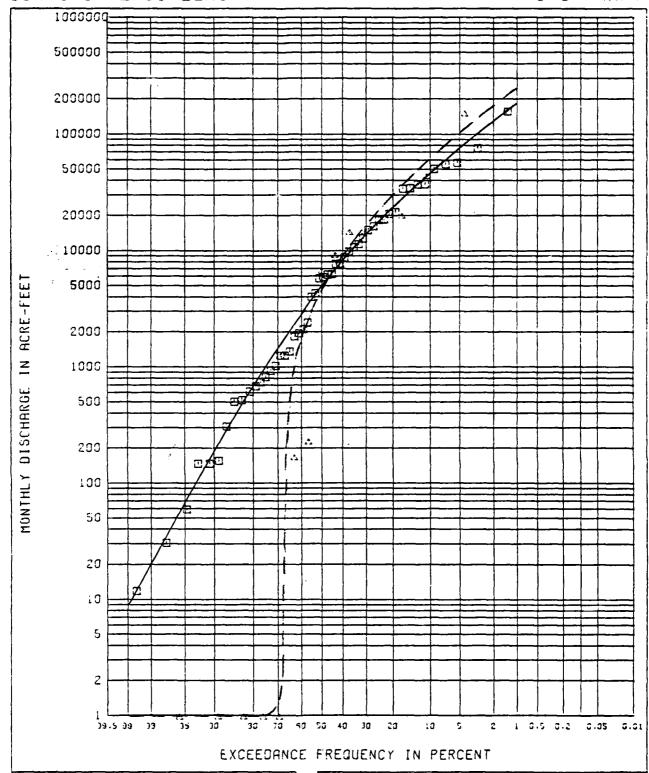


€ PRE-IMPOUNDMENT CONDITIONS (PERIOD OF RECORD 1999-1943) POST-IMPOUNDMENT CONDITIONS (PERIOD OF RECORD 1952-1979) WHITNEY LAKE

FLOW DURATION CURVES AT DAM SITE NOVEMBER FLOWS

U.S. ARMY ENGINEER DISTRICT. FORT WORTH TO ACCOMPANY INSTREAM FLOW PROBLEMS AND NEEDS EVALUATION REPORT OF DECEMBER 1990 PLATE 23





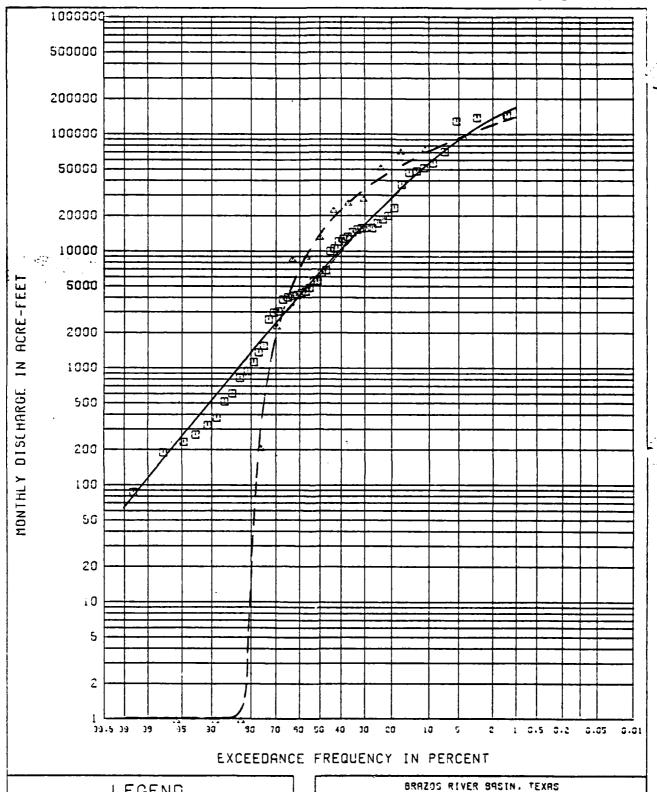
PRE-IMPOUNDMENT CONDITIONS
(PERIOD OF RECORD 1907-1956)

- - - POST-IMPOUNDMENT CONDITIONS
(PERIOD OF RECORD 1993-1979)

BRAZOS RIVER BASIN. TEXAS
WACO LAKE
DISCHARGE-FREQUENCY RELATIONS
AT DAM SITE
JANUARY FLOWS

U.S. ARMY ENGINEER DISTRICT. FORT WORTH
TO ACCOMPANY INSTREM FLOH PROBLEMS AND NEEDS
EVALUATION REPORT OF DECEMBER 1980

PLATE 1

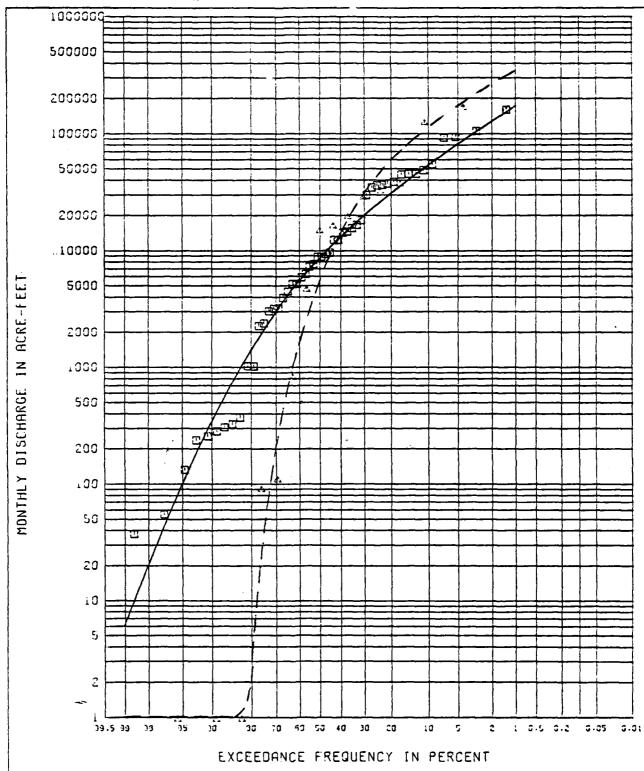


PRE-IMPOUNDMENT CONCITIONS (PERIOD OF RECORD 1307-1359)

- POST-IMPOUNDMENT CONCITIONS (PERIOD OF RECORD 1363-1979)

WACO LAKE DISCHARGE-FREQUENCY RELATIONS AT DAM SITE FEBRUARY FLOWS

U.S. ARMY ENGINEER DISTRICT. FORT WORTH TO ACCOMPANY INSTREAM FLOW PROBLEMS AND NEEDS EVALUATION REPORT OF DECEMBER 1980 PLATE 2 .

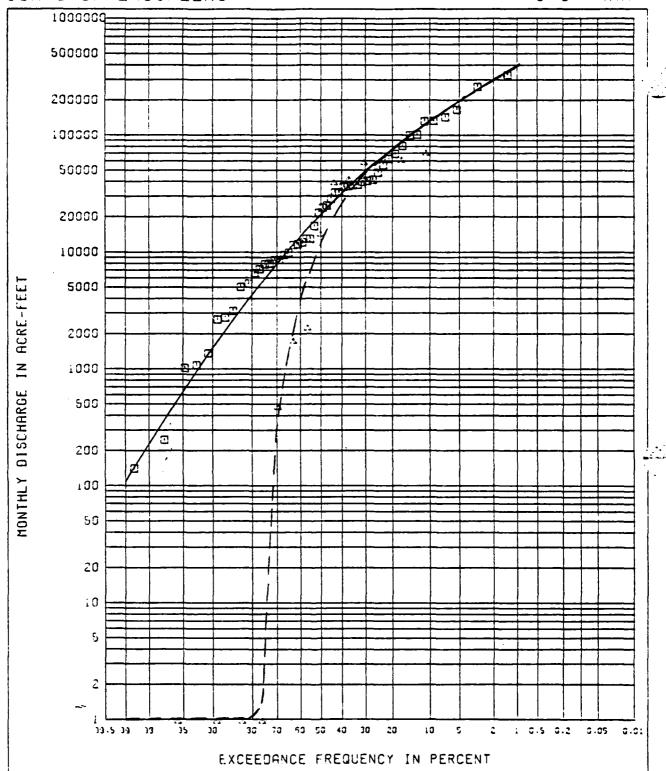


PRE-IMPOUNCHENT CONCITIONS

(PERIOD OF RECORD 1907-1956)

→ → POST-IMPOUNDMENT CONDITIONS (PERIOD OF RECORD 1983-1979) BRAZOS RIVER BASIN. TEXAS
WACO LAKE
DISCHARGE-FREQUENCY RELATIONS
AT DAM SITE
MARCH FLOWS

U.S. ARMY ENGINEER DISTRICT. FORT WORTH
TO ACCOMPANY INSTREAM FLOW PROBLEMS AND NEEDS
EVALUATION REPORT OF DECEMBER 1980
PLATE 5



PRE-IMPOUNDMENT CONDITIONS
(PERIOD OF RECORD 1907-1956)

- - POST-IMPOUNDMENT CONDITIONS

(PERIOD OF RECORD 1963-1978)

STRICTS RIVER BRSIN. TEXAS

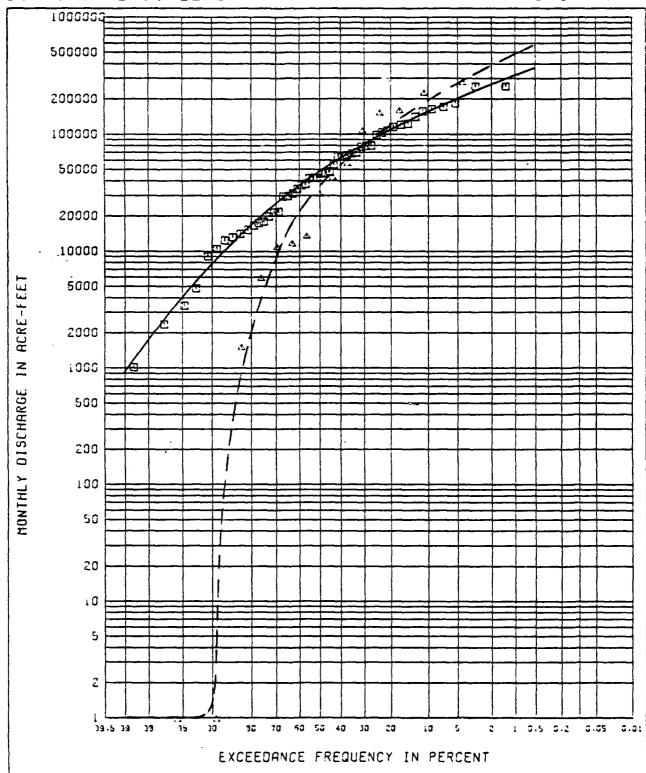
WACO LAKE

DISCHARGE-FREQUENCY RELATIONS

AT DAM SITE

APRIL FLOWS

U.S. ARMY ENGINEER DISTRICT. FORT WORTH
TO ACCOMPANY INSTREM FLOH PROBLEMS AND NEEDS
EVALUATION REPORT OF DECEMBER 1390



PRE-IMPOUNDMENT CONDITIONS

(PERIOD OF RECORD 1907-1955)

A- - POST-IMPOUNDMENT CONDITIONS
(PERIOD OF RECORD 1963-1979)

BRAZOS RIVER BASIN, TEXAS

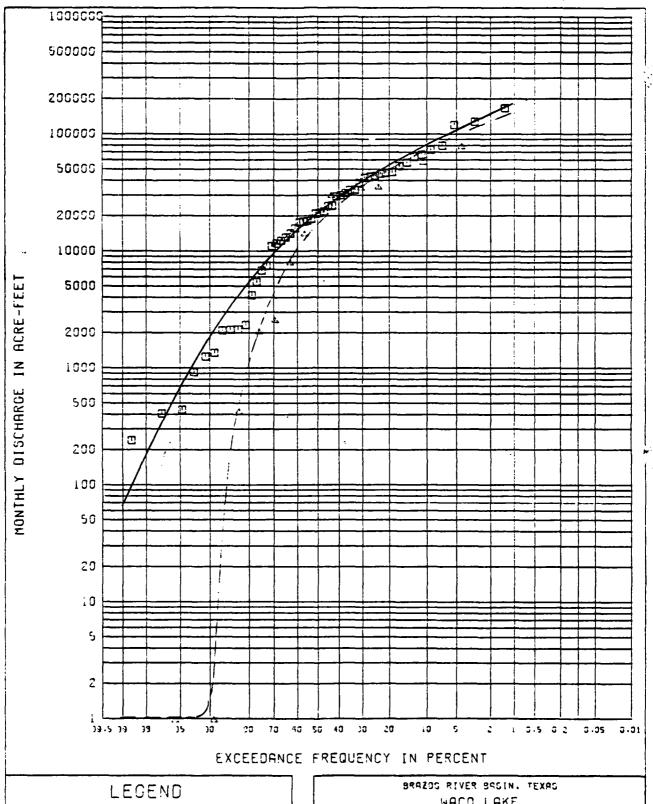
WACO LAKE

DISCHARGE-FREQUENCY RELATIONS

AT DAM SITE

MAY FLOWS

U.S. ARMY ENGINEER DISTRICT. FORT WORTH TO ACCOMPANY INSTREAM FLOW PROBLEMS AND NEEDS EVALUATION REPORT OF DECEMBER 1980. PLATE'S



PRE-IMPOUNDMENT CONDITIONS
(PERIOD OF RECORD 1907-1959)

- - POST-IMPOUNDMENT CONDITIONS
(PERIOD OF RECORD (1993-1979)

BRAZOS RIVER BASIN. TEXAS

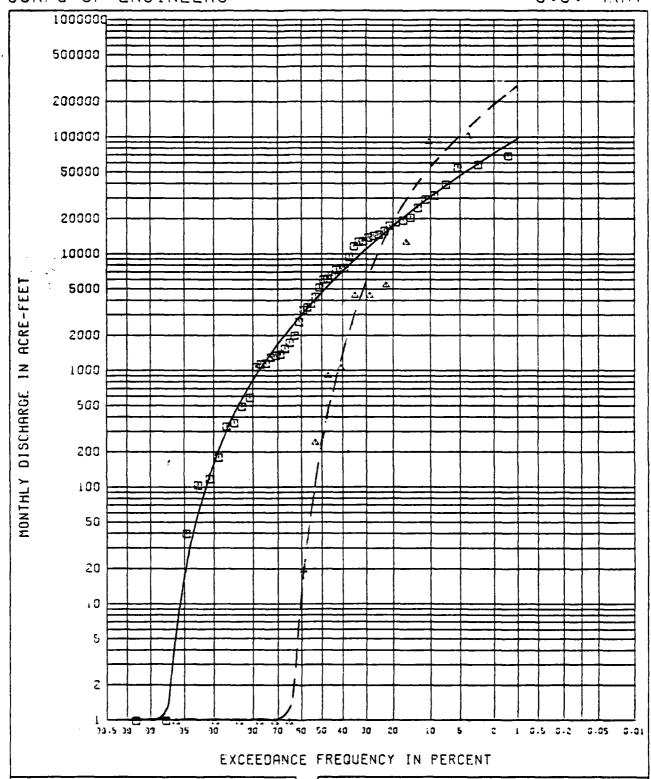
WACO LAKE

DISCHARGE-FREQUENCY RELATIONS

AT DAM SITE

JUNE FLOWS

U.S. ARMY ENGINEER DISTRICT. FORT WORTH TO ACCOMPANY INSTREAM FLOW PROBLEMS AND NEEDS EVALUATION REPORT OF DECEMBER 1990 PLATE 6



PRE-IMPOUNDMENT CONDITIONS (PERIOD OF RECORD 1907-1956)

- - POST-IMPOUNDMENT CONDITIONS
(PERIOD OF RECORD 1993-1979)

BRAZOS RIVER BASIN. TEXAS

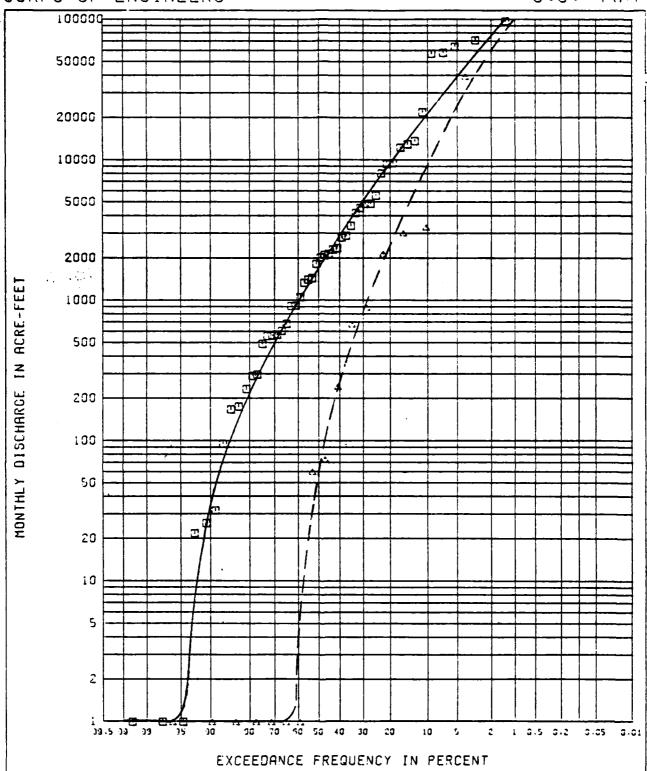
WACO LAKE

DISCHARGE-FREQUENCY RELATIONS

AT DAM SITE

JULY FLOWS

U.S. ARMY ENGINEER DISTRICT. FORT HORTH TO ACCOMPANY INSTREAM FLOW PROBLEMS AND NEEDS EVALUATION REPORT OF DECEMBER 1990 PLATE 7



PRE-IMPOUNDMENT CONSITIONS
(PERIOD OF RECORD 1907-1955)

- - - POST-IMPOUNCHENT CONDITIONS
(PERIOD OF RECORD 1969-1979)

BRAZOS RIVER BASIN. TEXAS

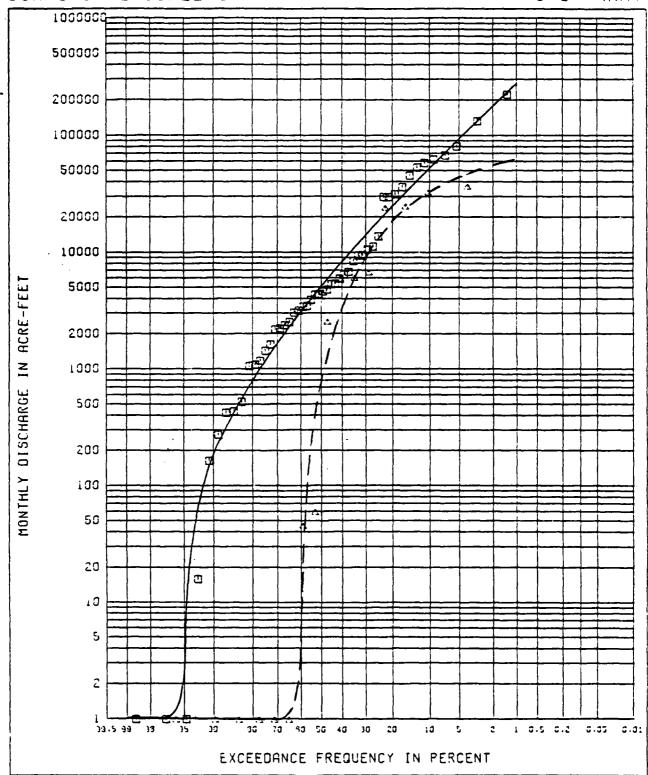
WACO LAKE

DISCHARGE-FREQUENCY RELATIONS

AT DAM SITE

AUGUST FLOWS

U.S. ARMY ENGINEER DISTRICT. FORT WORTH TO ACCOMPANY INSTREAM FLOW PROBLEMS AND NEEDS EVALUATION REPORT OF DECEMBER 1990



PRE-IMPOUNDMENT CONDITIONS

(PERIOD OF RECORD 1907-1955)

- - - POST-IMPOUNDMENT CONGITIONS (PERIOD OF RECORD 1963-1979)

BRAZOS RIVER BASIN. TEXAS

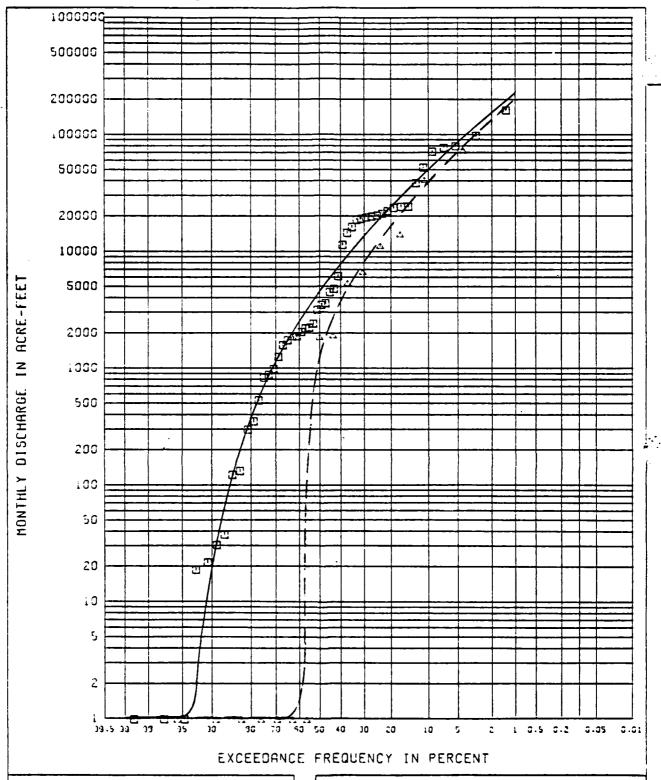
WACO LAKE

DISCHARGE-FREQUENCY RELATIONS

AT DAM SITE

SEPTEMBER FLOWS

U.S. ARMY ENGINEER DISTRICT. FORT WORTH
TO ACCOMPANY INSTREAM FLOW PROBLEMS AND NEEDS
EVALUATION REPORT OF DECEMBER 1990
PLATE 9



PRE-IMPOUNDMENT CONDITIONS
(PERIOD OF RECORD 1007-1056)

- - - POST-IMPOUNDMENT CONDITIONS
(PERIOD OF RECORD 1993:1979)

BRAZOS RIVER BASIN. TEXAS

WACO LAKE

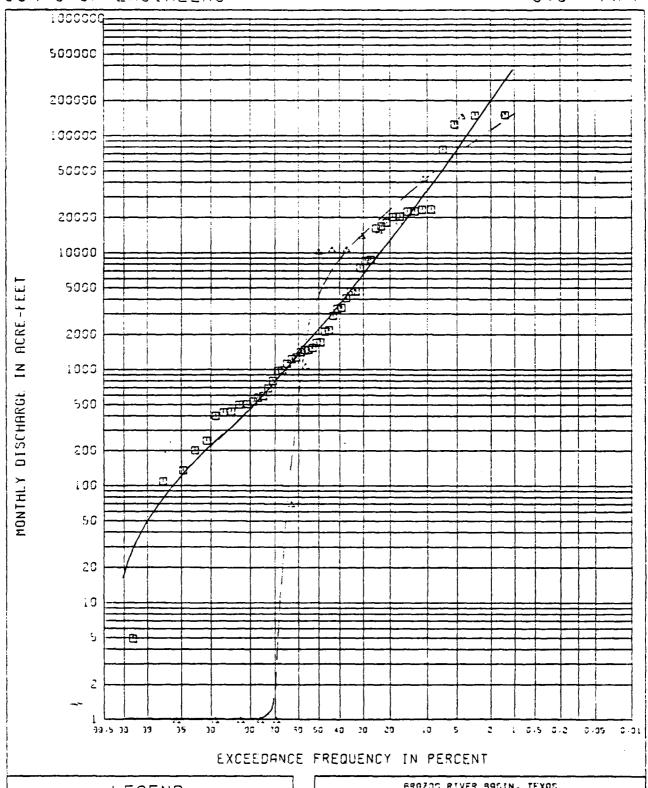
DISCHARGE-FREQUENCY RELATIONS

AT DAM SITE

OCTOBER FLOWS

U.S. ARMY ENGINEER DISTRICT. FORT WORTH TO ACCOMPANY INSTREAM FLOW PROBLEMS AND NEEDS EVALUATION REPORT OF DECEMBER 1990

PLATE 10

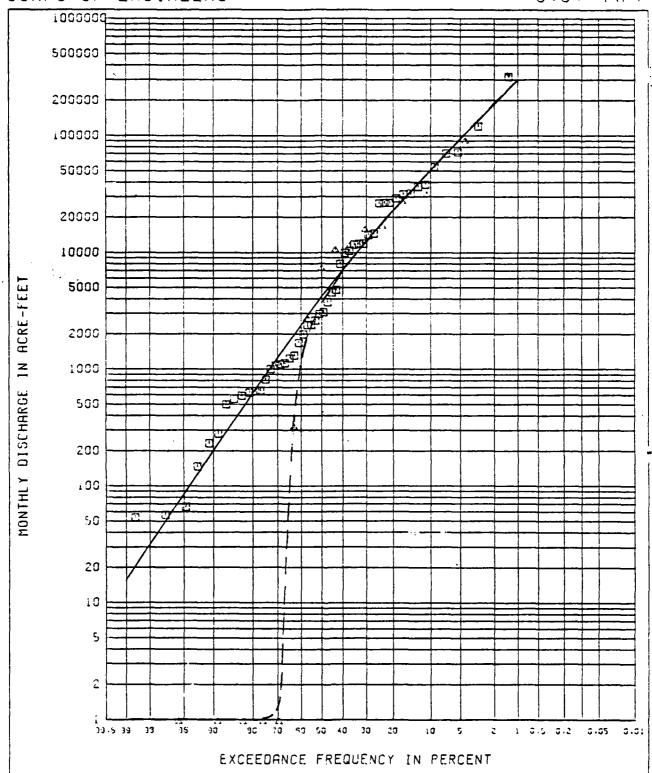


M PRE-IMPOUNDMENT CONDITIONS (PERIOD OF RECORD 1907-1959)

- -- POST-INFOUNDMENT CONCITIONS (PERIOD OF RECORD 1983-1978)

BRAZOS RIVER BASIN. TEXAS
WACO LAKE
DISCHARGE-FREQUENCY RELATIONS
AT DAM SITE
NOVEMBER FLOWS

U.S. ARMY ENGINEER DISTRICT. FORT WORTH
TO ACCOMPANY INSTREAM FLOW PROBLEMS AND NEEDS
EVALUATION REPORT OF DECEMBER 1380
PLATE 11



PRE-IMPOUNDMENT CONDITIONS
(PERIOD OF RECORD 1907-1955)

→ → POST-IMPOUNDMENT CONDITIONS (PERIOD OF RECORD 1963-1979) BRAZOS RIVER BASIN. TEXAS

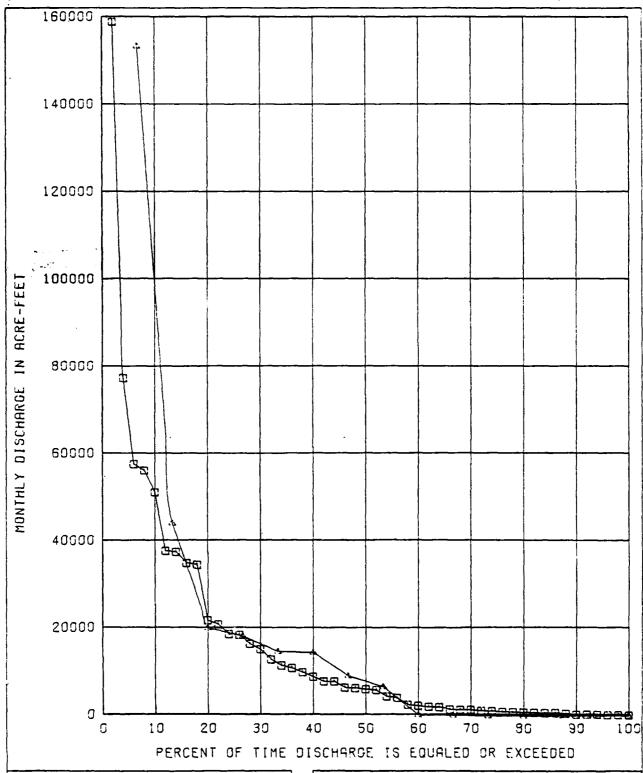
WACO LAKE

DISCHARGE-FREQUENCY RELATIONS

AT DAM SITE

DECEMBER FLOWS

U.S. ARMY ENGINEER DISTRICT, FORT WORTH
TO ACCOMPANY INSTREAM FLOW PROBLEMS AND NEEDS
EVALUATION REPORT OF DECEMBER 1990



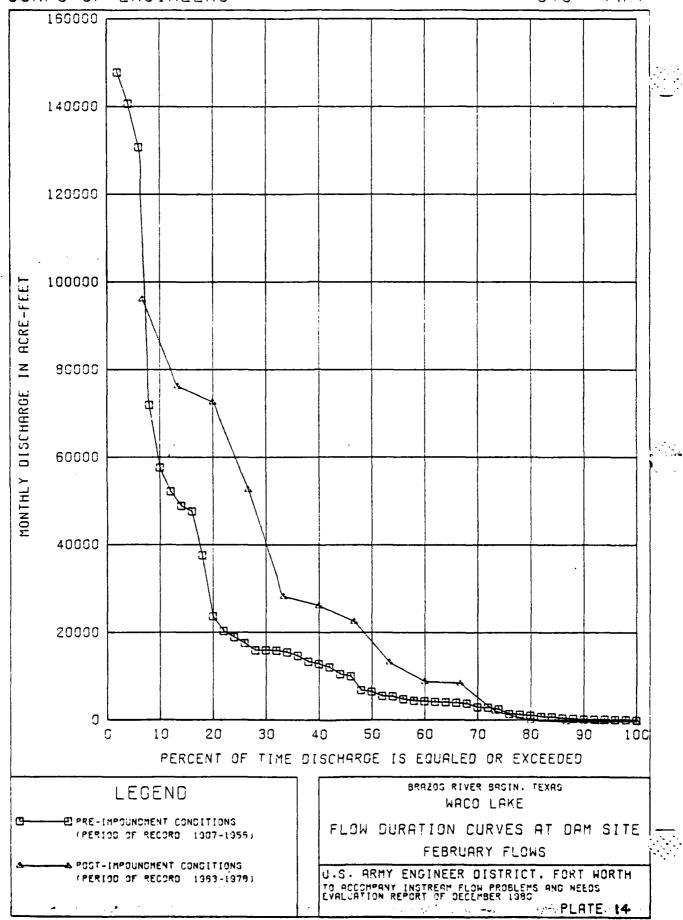
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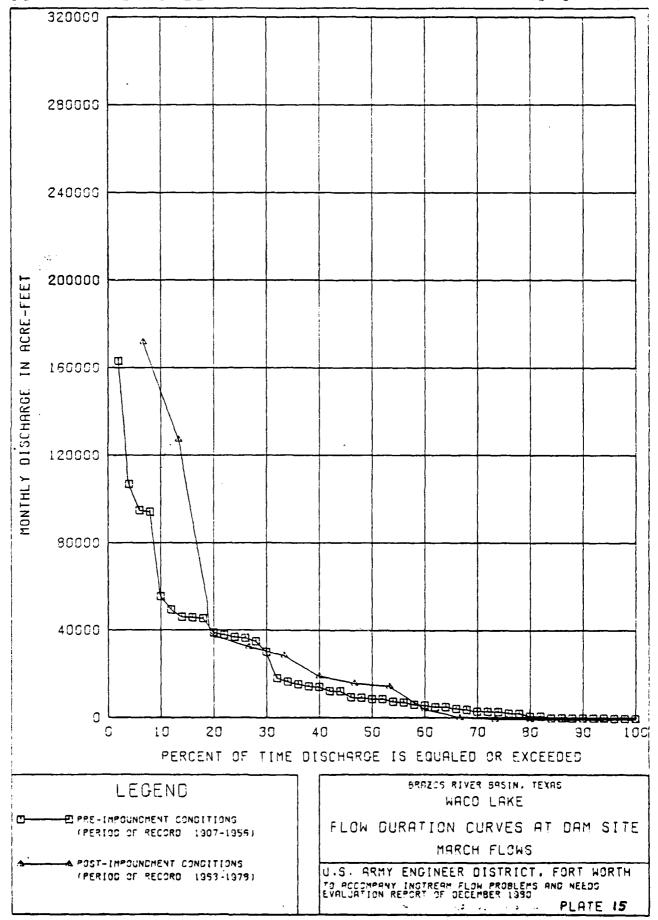
POST-IMPOUNDMENT CONDITIONS
(PERIOD OF RECORD 1963-1979)

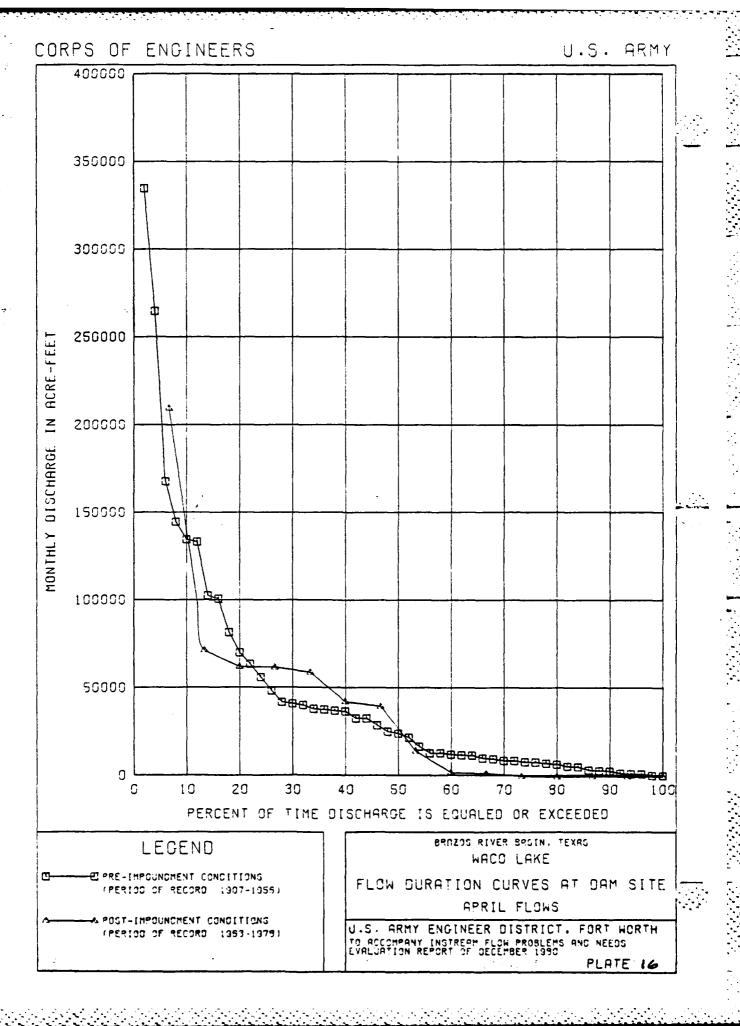
GRAZOS RIVER BASIN. TEXAS WACO LAKE

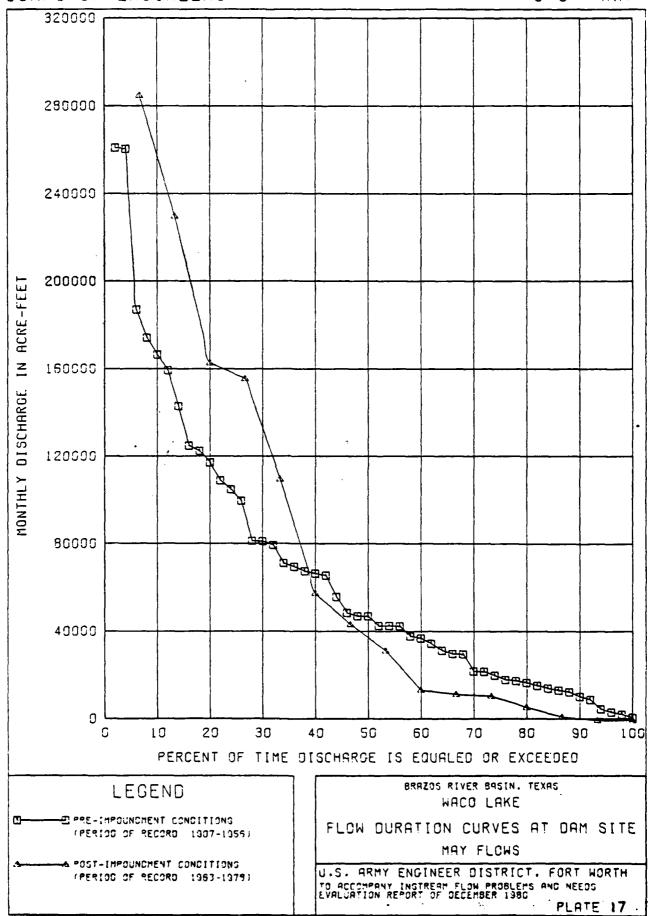
FLOW DURATION CURVES AT DAM SITE JANUARY FLOWS

U.S. ARMY ENGINEER DISTRICT. FORT WORTH TO ACCOMPANY INSTREAM FLOW PROBLEMS AND NEEDS EVALUATION REPORT OF DECEMBER 1980



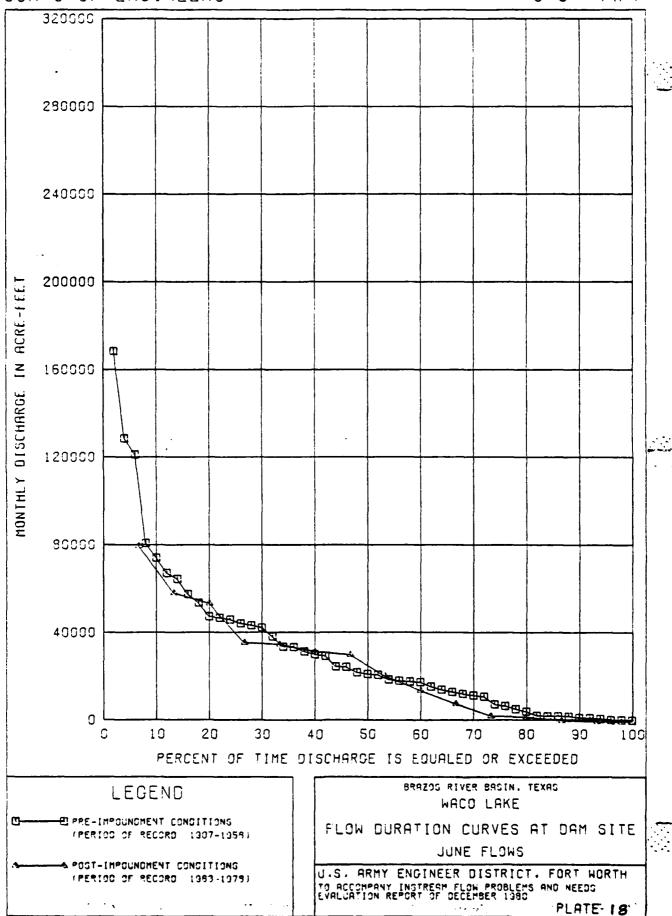


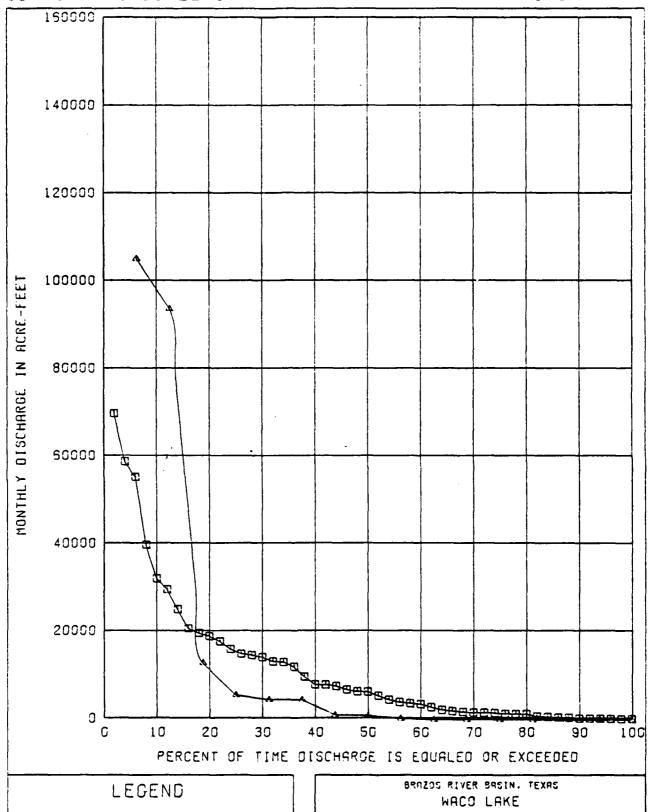






U.S. ARMY





PRE-IMPOUNDMENT CONDITIONS

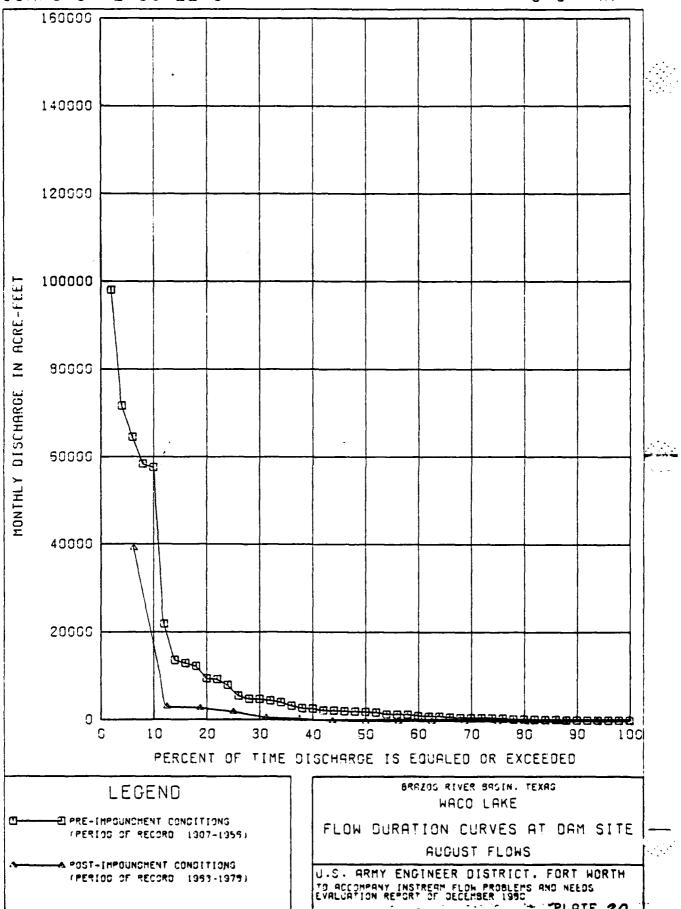
(PERIOD OF RECORD 1907-1955)

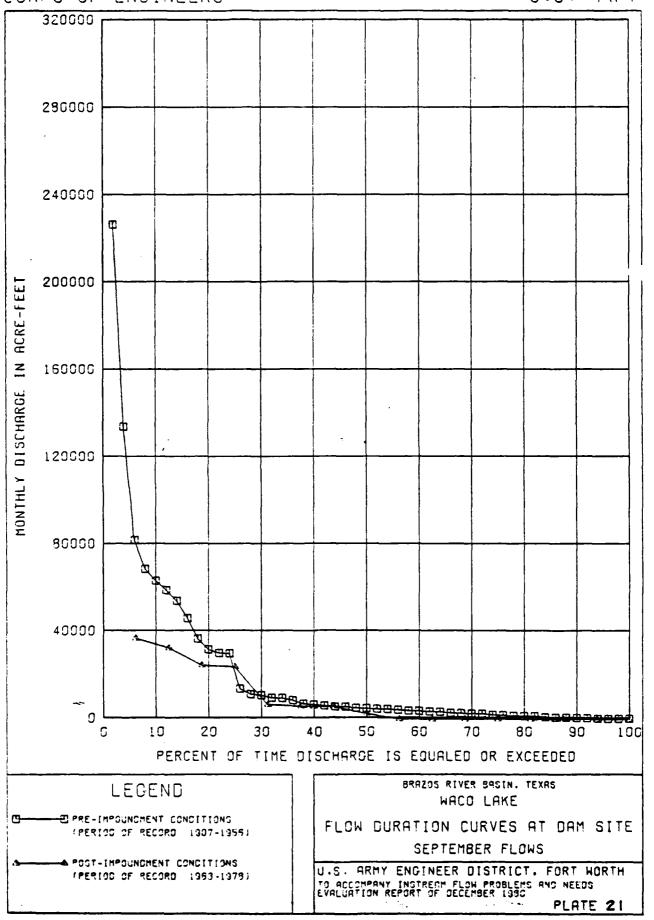
POST-IMPOUNDMENT CONDITIONS

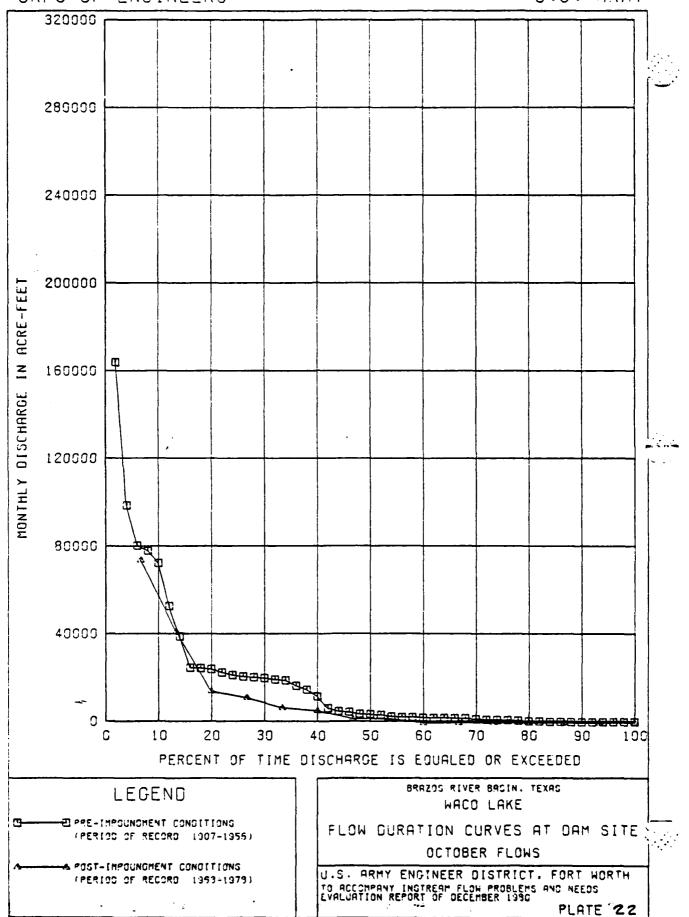
(PERIOD OF RECORD 1953-1978)

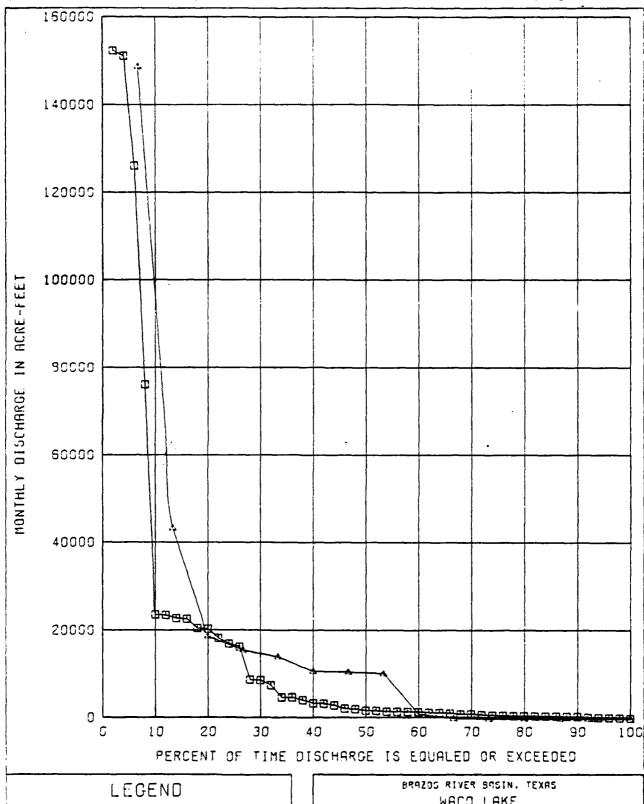
FLOW DURATION CURVES AT DAM SITE JULY FLOWS

U.S. ARMY ENGINEER DISTRICT. FORT HORTH
TO ACCOMPANY INSTREAM FLOH PROBLEMS AND NEEDS
EVALUATION REPORT OF DECEMBER 1990
PLATE 19









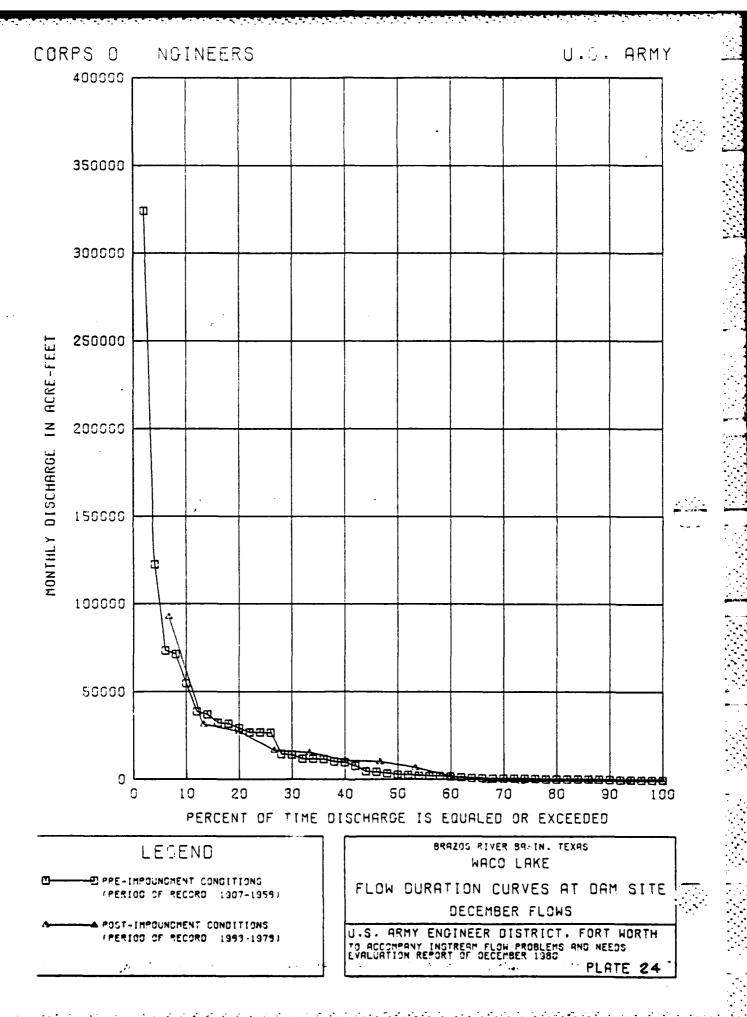
E PRE-IMPOUNDMENT CONDITIONS (PERIOD OF RECORD | 1907-1955)

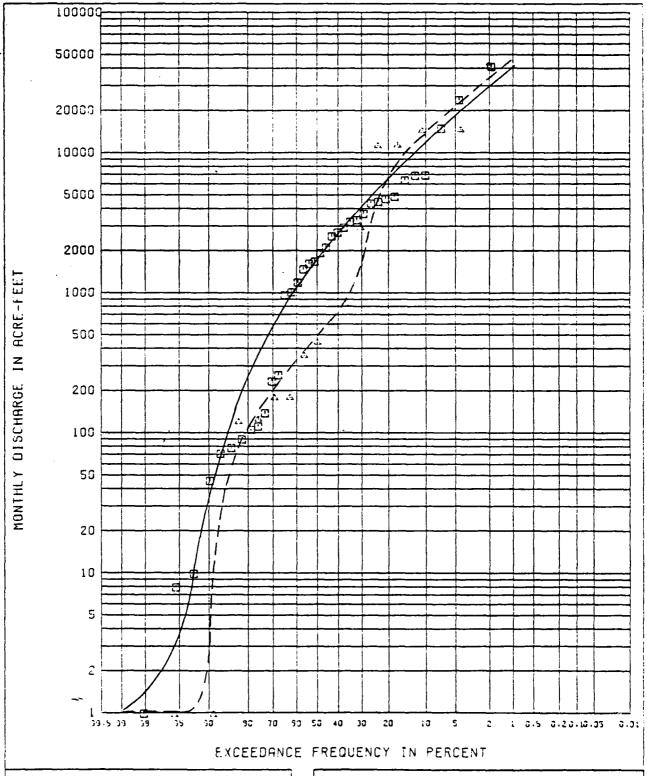
A POST-IMPOUNDMENT CONDITIONS (PERIOD OF RECORD 1963-1979) WACO LAKE

FLOW DURATION CURVES AT DAM SITE NOVEMBER FLOWS

U.S. ARMY ENGINEER DISTRICT. FORT WORTH

PLATE 23



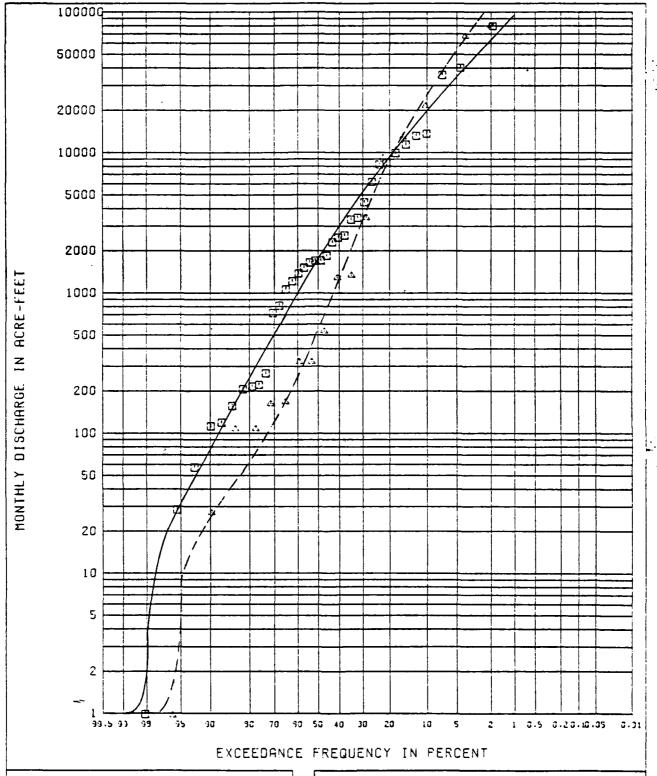


© PRE-IMPOUNCMENT CONDITIONS (PERIOD OF RECORD 1922-1959)

- -- POST-IMPOUNCHENT CONCITIONS
(PERIOD OF RECORD 1953-1979)

BROIDS RIVER BASIN, TEXAS
PROCTOR LAKE
DISCHARGE-FREQUENCY RELATIONS
AT DAM SITE
JANUARY FLOWS

U.S. ARMY ENGINEER DISTRICT. FORT WORTH
TO ACCOMPANY INSTREAM FLOW PROBLEMS AND NEEDS
EVALUATION REPORT OF DECEMBER 1990
PLATE (



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PRE-IMPOUNDMENT CONDITIONS (PERIOD OF RECORD 1922-1959)

→ → POST-IMPOUNCHENT CONDITIONS (PERIOD OF RECORD 1963-1979) BRAZOS RIVER BASIN. TEXAS

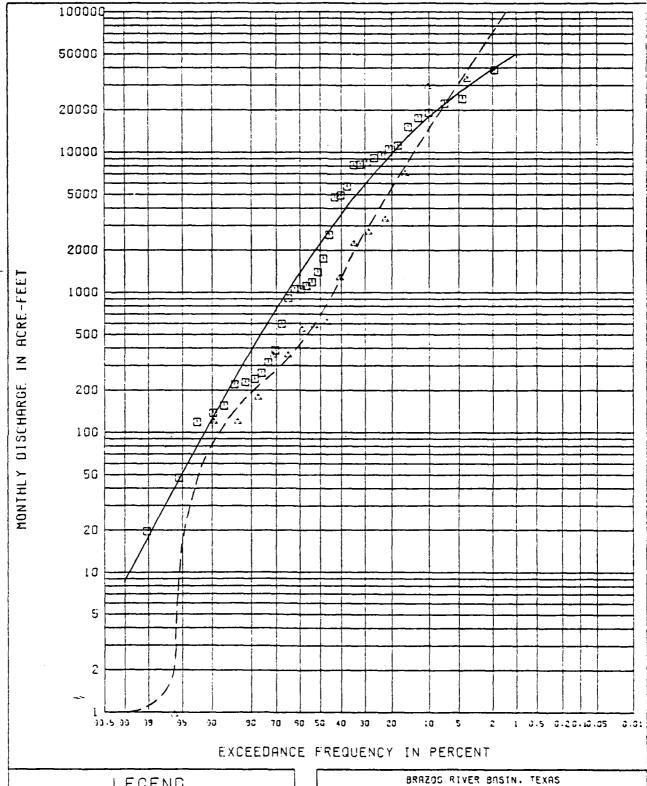
PROCTOR LAKE

DISCHARGE-FREQUENCY RELATIONS

AT DAM SITE

FEBRUARY FLOWS

U.S. ARMY ENGINEER DISTRICT. FORT WORTH
TO ACCOMPANY INSTREAM FLOW PROBLEMS AND NEEDS
EVALUATION REPORT OF DECEMBER 1980
PLATE 2

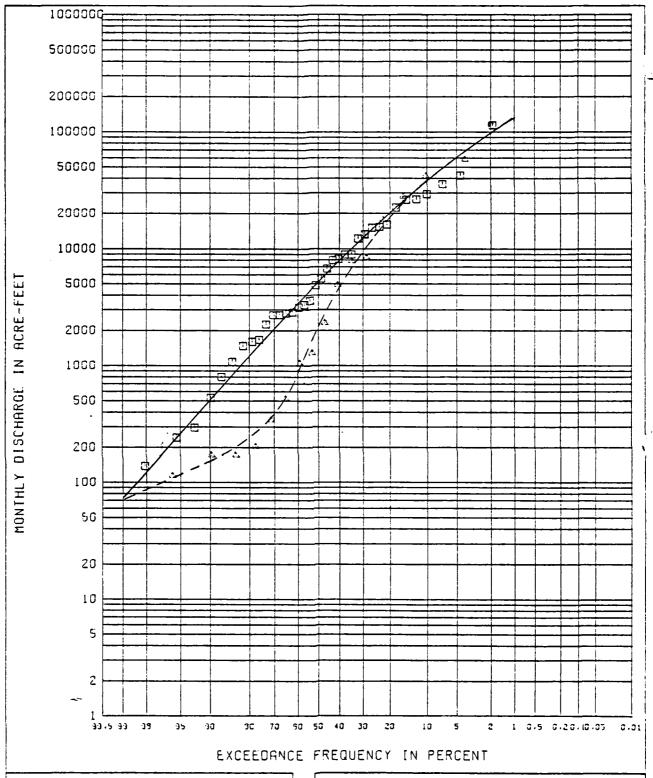


E PRE-IMPOUNDMENT CONCITIONS (PERIOD OF RECORD 1022-1959)

-& POST-IMPOUNCHENT CONCITIONS (PERIOD OF RECORD 1993-1979)

PROCTOR LAKE DISCHARGE-FREQUENCY RELATIONS AT DAM SITE MARCH FLOWS

U.S. ARMY ENGINEER DISTRICT. FORT WORTH TO ACCOMPANY INSTREAM FLOW PROBLEMS AND NEEDS EVALUATION REPORT OF DECEMBER 1990 PLATE 3

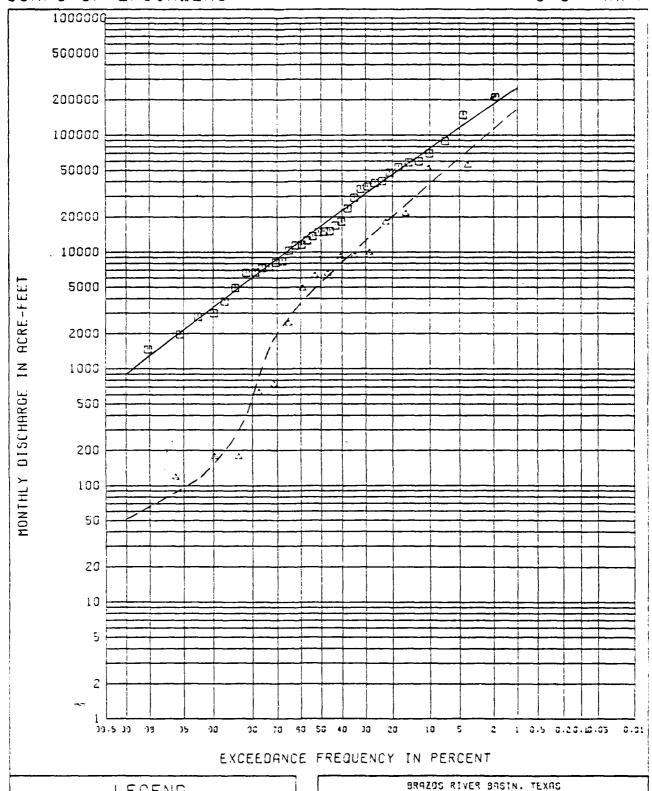


PRE-IMPOUNDMENT CONDITIONS
(PERIOD OF RECORD 1922-1959)

- - - POST-IMPOUNDMENT CONDITIONS
(PERIOD OF RECORD 1963-1979)

BRAZOS RIVER BASIN. TEXAS
PROCTOR LAKE
DISCHARGE-FREQUENCY RELATIONS
AT DAM SITE
APRIL FLOWS

U.S. ARMY ENGINEER DISTRICT. FORT WORTH TO ACCOMPANY INSTREAM FLOW PROBLEMS AND WEEDS EVALUATION REPORT OF DECEMBER 1990 PLATE 4

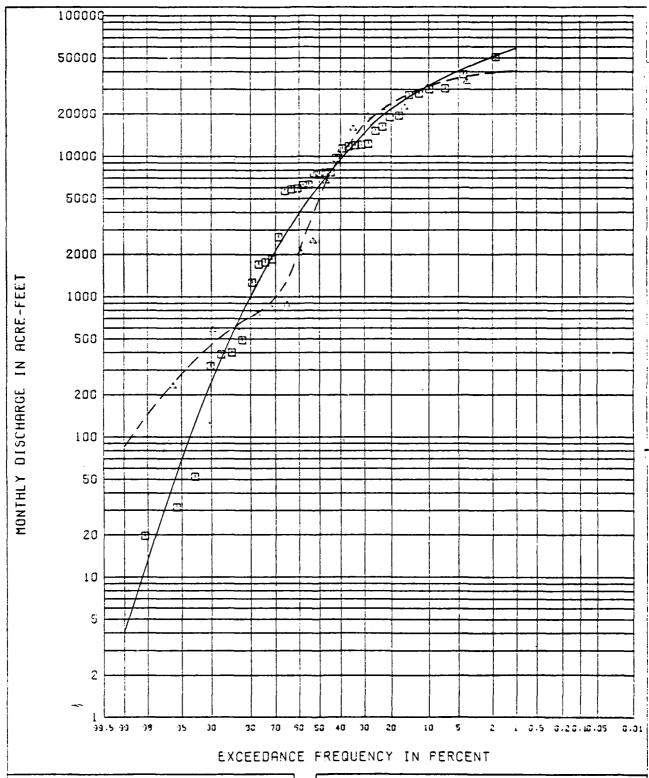


- PRE-IMPOUNDMENT CONDITIONS (PERIOD OF RECORD | 1922-1959)

-S POST-IMPOUNDMENT CONCITIONS (PERIOD OF RECORD 1963-1979)

PROCTOR LAKE DISCHARGE-FREQUENCY RELATIONS AT DAM SITE MAY FLOWS

U.S. ARMY ENGINEER DISTRICT. FORT WORTH TO ACCOMPANY INSTREAM FLOW PROBLEMS AND NEEDS EVALUATION REPORT OF DECEMBER 1980 PLATE 5



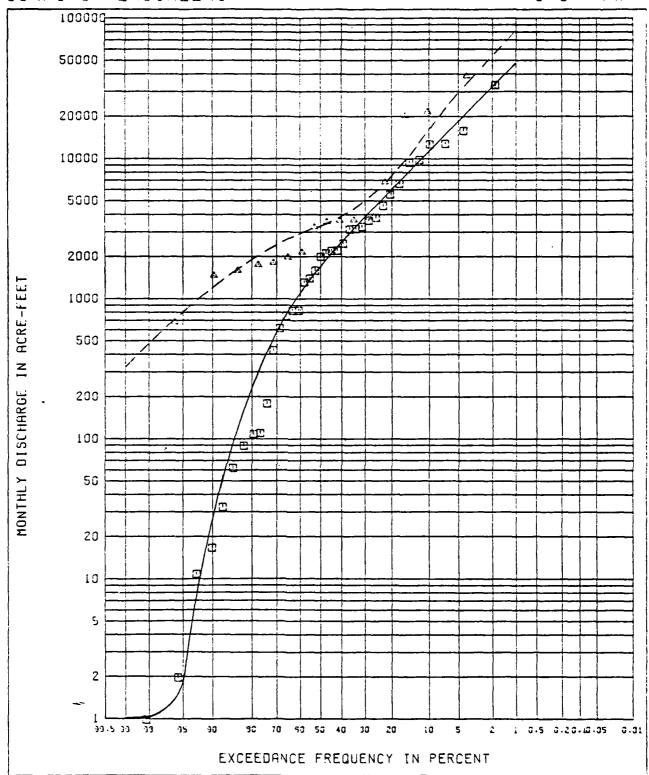
PRE-IMPOUNDMENT CONDITIONS

(PERIOD OF RECORD 1922-1959)

- - A POST-IMPOUNDMENT CONDITIONS
(PERIOD OF RECORD 1963-1978)

BRAZOS RIVER BASIN. TEXAS
PROCTOR LAKE
DISCHARGE-FREQUENCY RELATIONS
AT DAM SITE
JUNE FLOWS

U.S. ARMY ENGINEER DISTRICT. FORT WORTH
TO ACCOMPANY INSTREAM FLOH PROBLEMS AND NEEDS
EVALUATION REPORT OF DECEMBER 1990
PLATE 6



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PRE-IMPOUNDMENT CONDITIONS
(PERIOD OF RECORD 1922-1959)

> → → POST-IMPOUNDMENT CONCITIONS

(PERIOD OF RECORD 1963-1979)

BRAZOS RIVER BASIN. TEXAS

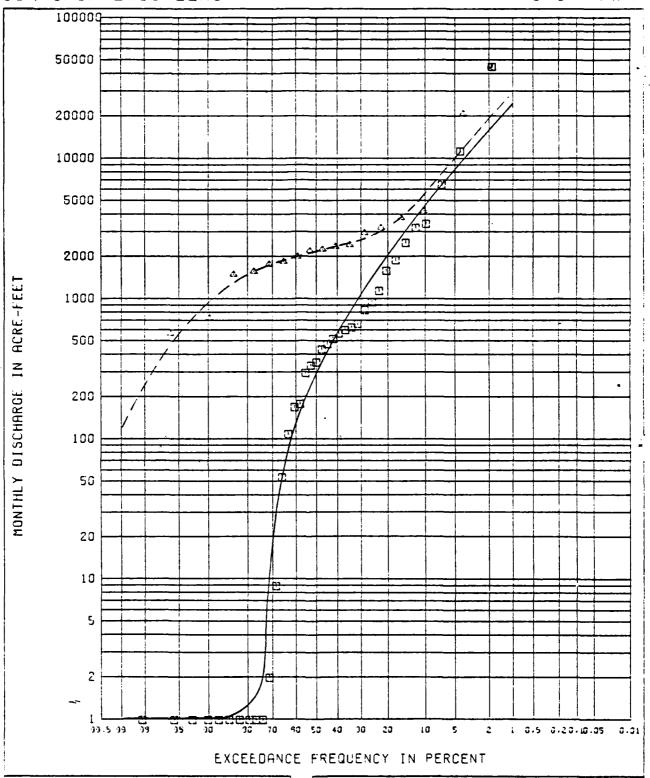
PROCTOR LAKE

DISCHARGE-FREQUENCY RELATIONS

AT DAM SITE

JULY FLOWS

U.S. ARMY ENGINEER DISTRICT. FORT WORTH
TO RECEMPANT INSTREAM FLOW PROBLEMS AND NEEDS
EVALUATION REPORT OF DECEMBER 1980
PLATE 7

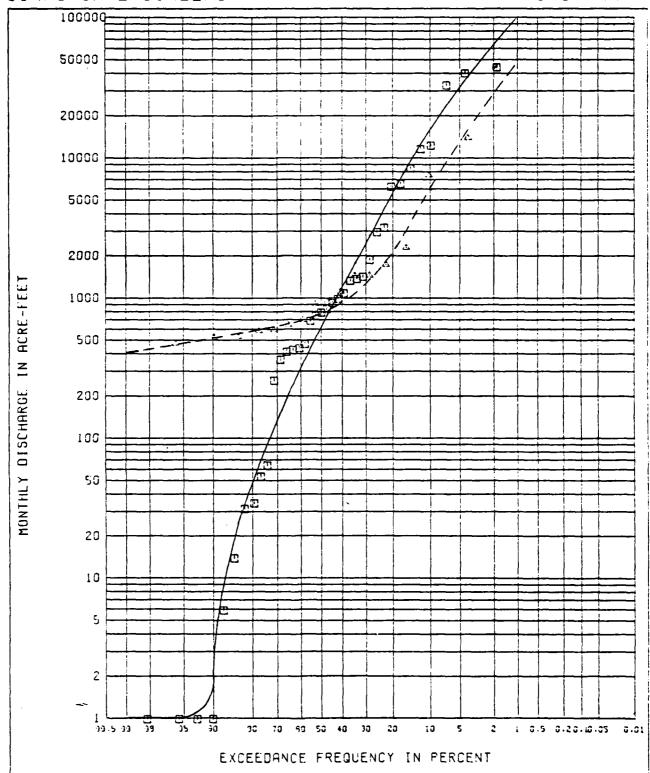


PRE-IMPOUNDMENT CONDITIONS
(PERIOD OF RECORD 1922-1959)

- - - POST-IMPOUNDMENT CONDITIONS
(PERIOD OF RECORD 1963-1978)

BRAZOS RIVER BASIN. TEXAS
PROCTOR LAKE
DISCHARGE-FREQUENCY RELATIONS
AT DAM SITE
AUGUST FLOWS

U.S. ARMY ENGINEER DISTRICT. FORT WORTH
TO ACCOMPANY INSTREAM FLOH PROBLEMS AND NEEDS
EVALUATION REPORT OF DECEMBER 1990
PLATE 8



PRE-IMPOUNDMENT CONDITIONS

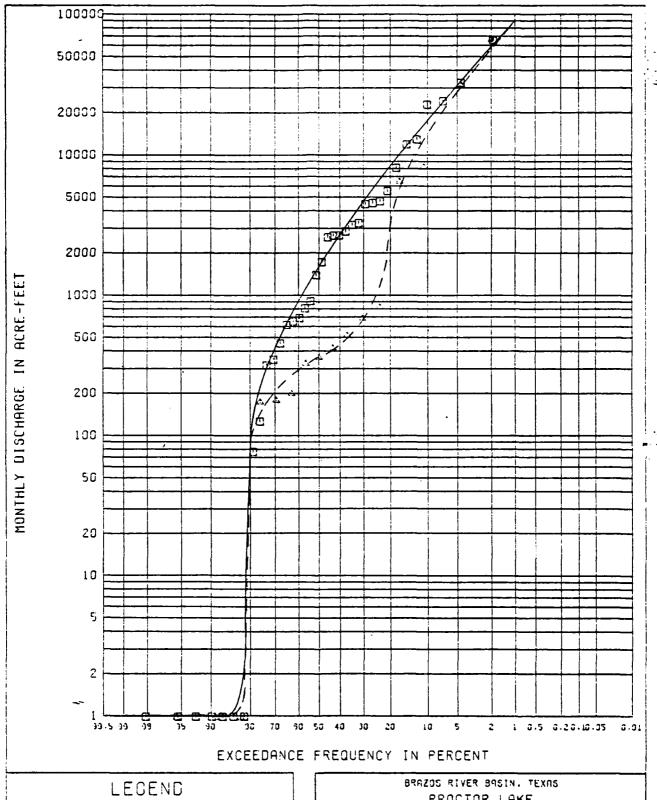
(PERIOD OF RECORD 1022-1059)

POST-IMPOUNDMENT CONCITIONS

(PERIOD OF RECORD 1963-1978)

BRAZOS RIVER BASIN. TEXAS
PROCTOR LAKE
DISCHARGE-FREQUENCY RELATIONS
AT DAM SITE
SEPTEMBER FLOWS

U.S. ARMY ENGINEER DISTRICT. FORT WORTH TO ACCOMPANY INSTREAM FLOW PROBLEMS AND NEEDS EVALUATION REPORT OF DECEMBER 1990 PLATE 9



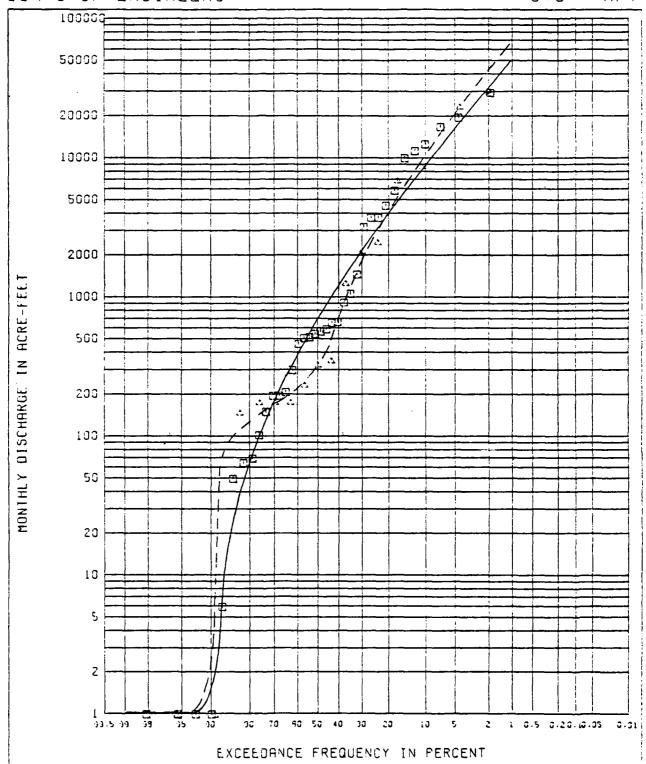
PRE-IMPOUNDMENT CONDITIONS

(PERIOD OF RECORD 1922-1959)

- - - POST-IMPOUNDMENT CONDITIONS
(PERIOD OF RECORD 1963-1979)

BRAZOS RIVER BASIN. TEXAS
PROCTOR LAKE
DISCHARGE-FREQUENCY RELATIONS
AT DAM SITE
OCTOBER FLOWS

U.S. ARMY ENGINEER DISTRICT. FORT WORTH
TO ACCOMPANY INSTREAM FLOH PROBLEMS AND NEEDS
EVALUATION REPORT OF DECEMBER 1980
PLATE 10



PRE-IMPOUNDMENT CONDITIONS

(PERIOD OF RECORD 1022-1059)

A- - - POST-IMPOUNDMENT CONDITIONS
(PERIOD OF RECORD 1993-1979)

PROCTOR LAKE

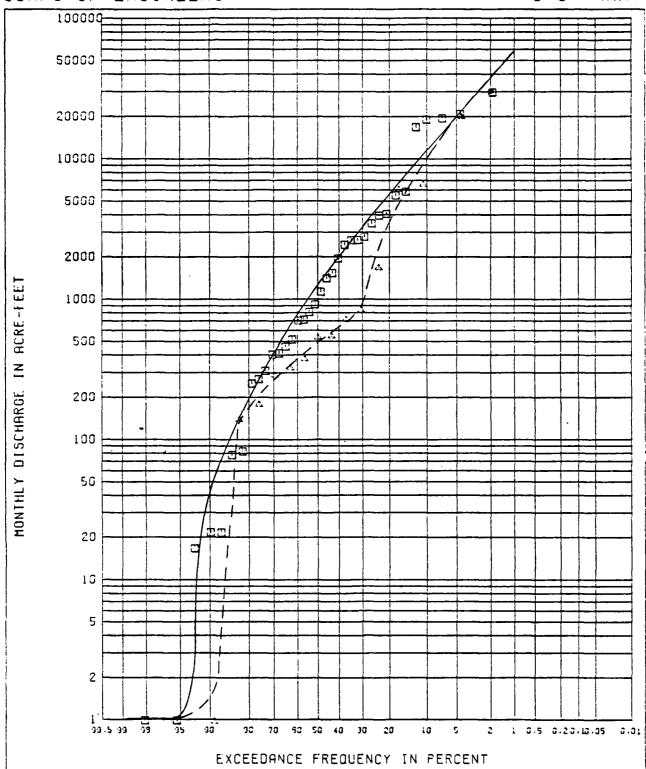
PROCTOR LAKE

DISCHARGE-FREQUENCY RELATIONS

AT DAM SITE

NOVEMBER FLOWS

U.S. ARMY ENGINEER DISTRICT. FORT HORTH
TO ACCOMPANY INSTREM FLOW PROBLEMS AND NEEDS
EVALUATION REPORT OF DECEMBER 1990
PLATE !!



PRE-IMPOUNDMENT CONDITIONS

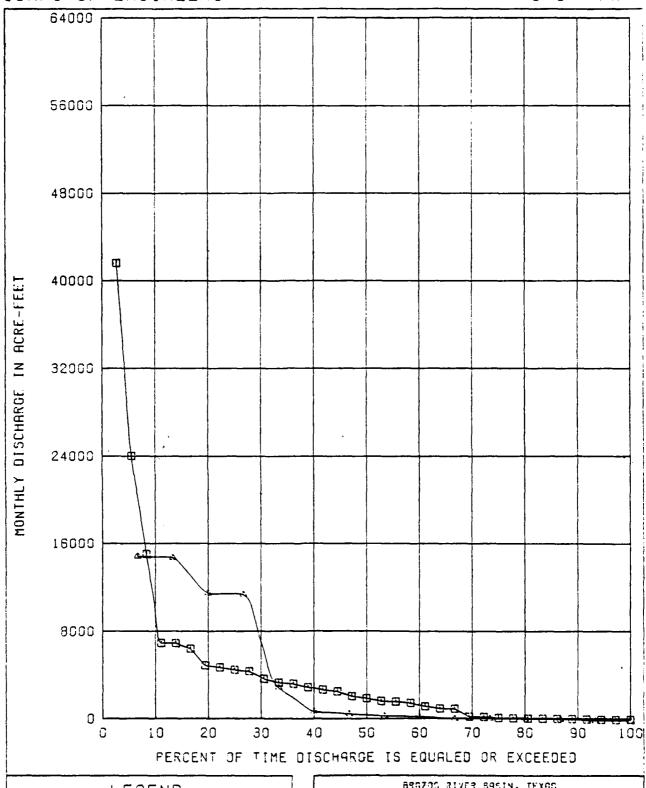
(PERIOD OF RECORD 1922-1959)

- - - POST-IMPOUNDMENT CONDITIONS

(PERIOD OF RECORD 1963-1978)

BRAZOS RIVER BASIN. TEXAS
PROCTOR LAKE
DISCHARGE-FREQUENCY RELATIONS
AT DAM SITE
DECEMBER FLOWS

U.S. ARMY ENGINEER DISTRICT. FORT WORTH TO ACCOMPANY INSTREAM FLOW PROBLEMS AND NEEDS EVALUATION REPORT OF DECEMBER 1390



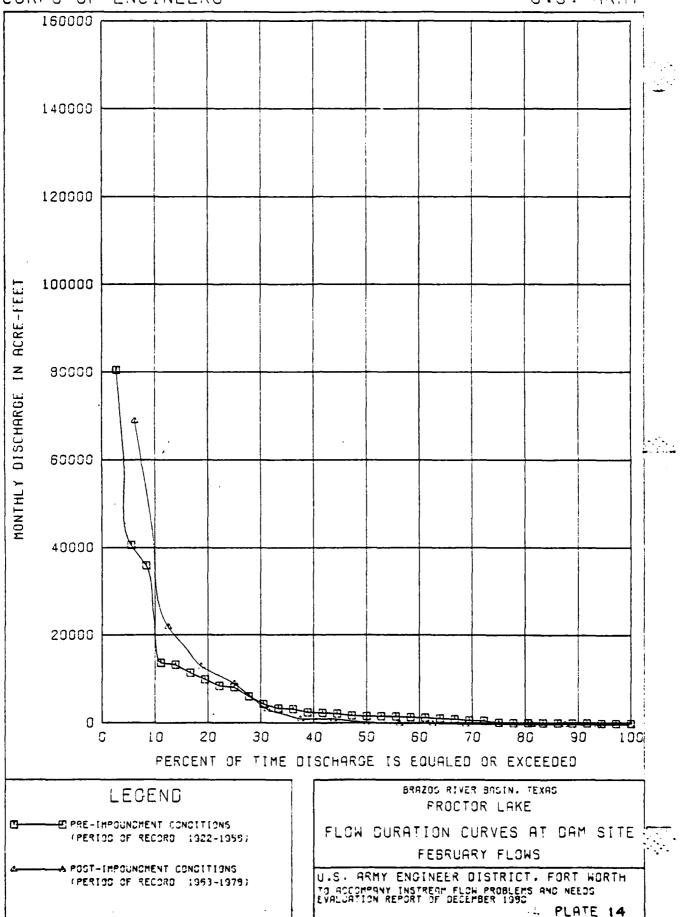
PRE-IMPOUNDMENT CONDITIONS (PERIOD OF RECORD 1922-1959)

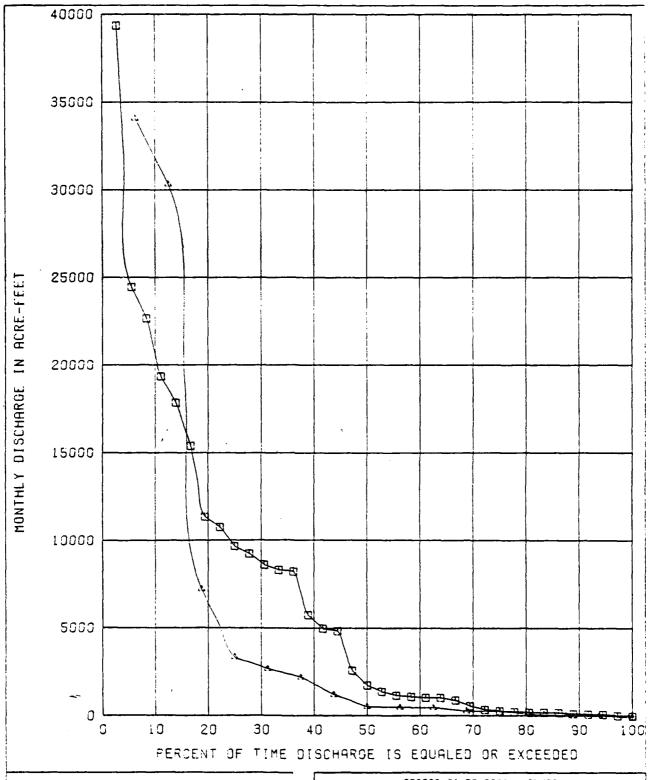
POST-IMPOUNDMENT CONDITIONS (PERIOD OF RECORD 1963-1978)

BRAZOS RIVER BASIN. TEXAS
PROCTOR LAKE

FLOW DURATION CURVES AT DAM SITE JANUARY FLOWS

U.S. ARMY ENGINEER DISTRICT. FORT WORTH TO ACCOMPANY INSTREAM FLOW PROBLEMS AND NEEDS EVALUATION REPORT OF DECEMBER 1990





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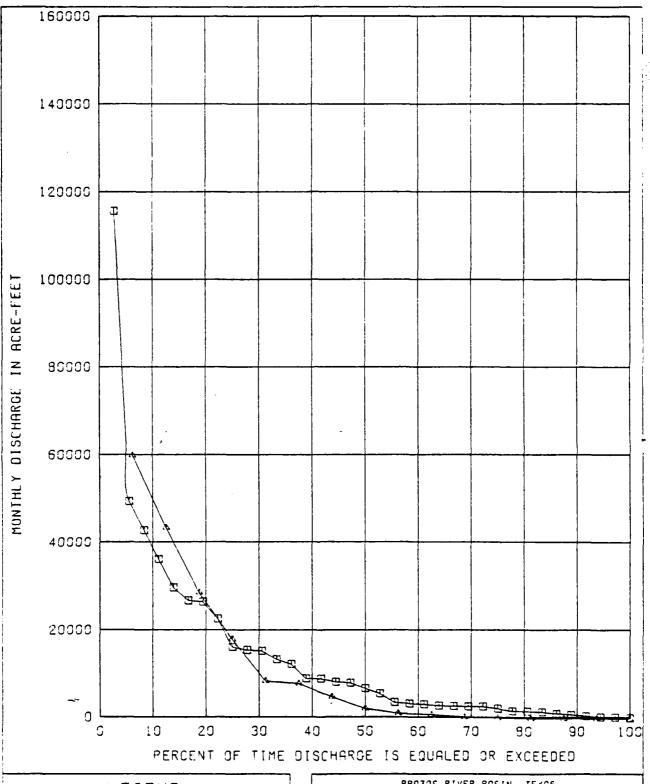
Dere-infoundment conditions
(Period of Record 1022-1059)

Post-infoundment conditions
(Period of Record 1983-1079)

PROCTOR LAKE

FLOW DURATION CURVES AT DAM SITE MARCH FLOWS

U.S. ARMY ENGINEER DISTRICT, FORT WORTH TO ASSOCIATION REPORT OF DECEMBER 1990
PLATE 15





—€199E-IMPOUNDHENT CONDITIONS (PERIOD OF RECORD 1922-1959)

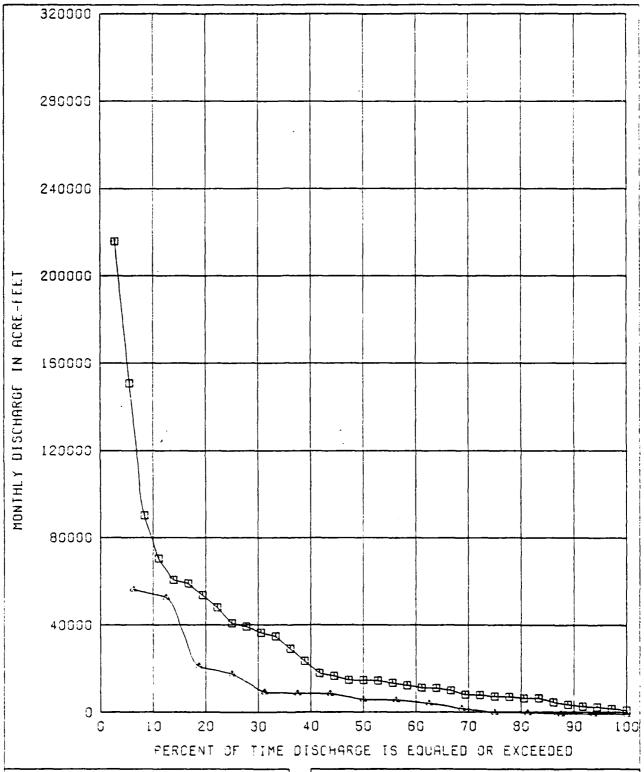
→ POST-IMPOUNDMENT CONDITIONS

** PERIOD OF RECORD | 1953-1979)

BRAZOS RIVER BASIN. TEXAS PROCTOR LAKE

FLOW DURATION CURVES AT DAM SITE APRIL FLOWS

U.S. ARMY ENGINEER DISTRICT. FORT WORTH
TO ACCOMPANY INSTREAM FLOW PROBLEMS AND NEEDS
EVALUATION REPORT OF DECEMBER 1980
PLATE 16



PRE-IMPOUNDMENT CONDITIONS
(PERIOD OF RECORD 1922-1959)

POST-IMPOUNDMENT CONCITIONS (PERIOD OF RECORD 1093-1079)

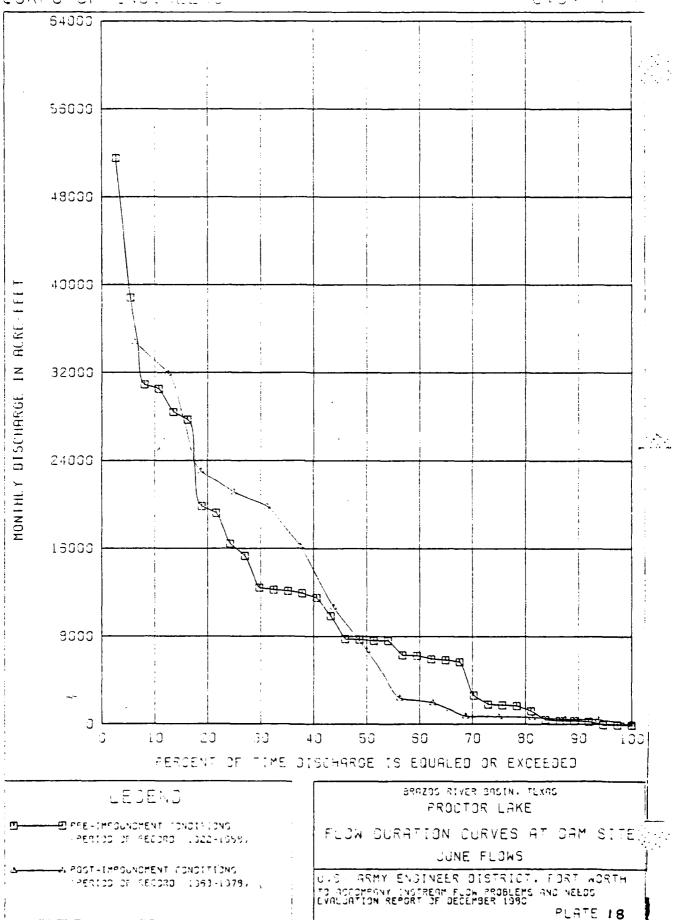
BRAZOS RIVER BASIN. TEXAS PROCTOR LAKE

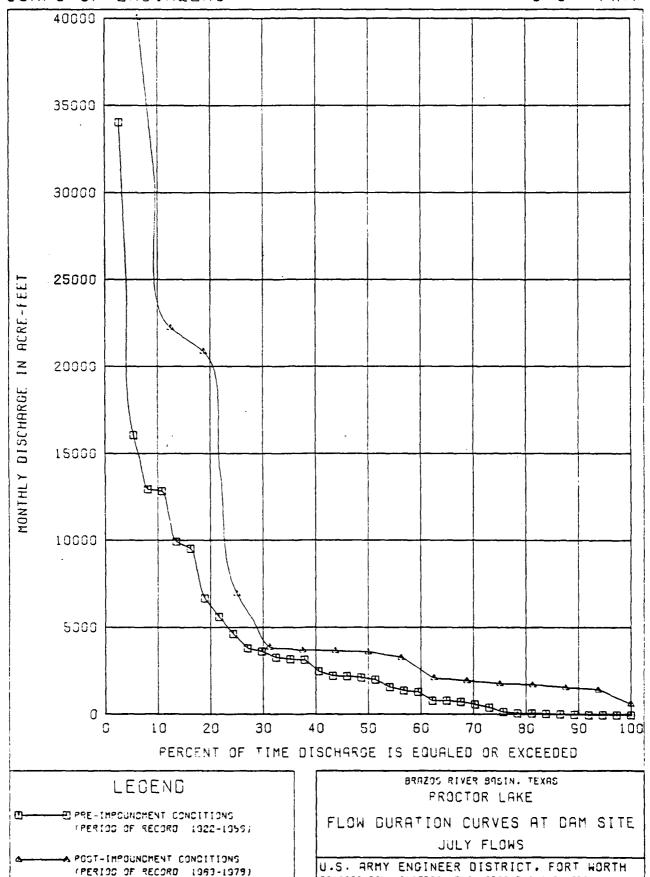
FLOW DURATION CURVES AT DAM SITE

MAY FLOWS

U.S. ARMY ENGINEER DISTRICT. FORT WORTH TO ACCOMPANY INSTREAM FLOW PROBLEMS AND NEEDS EVALUATION REPORT OF DECEMBER 1990

PLATE 17

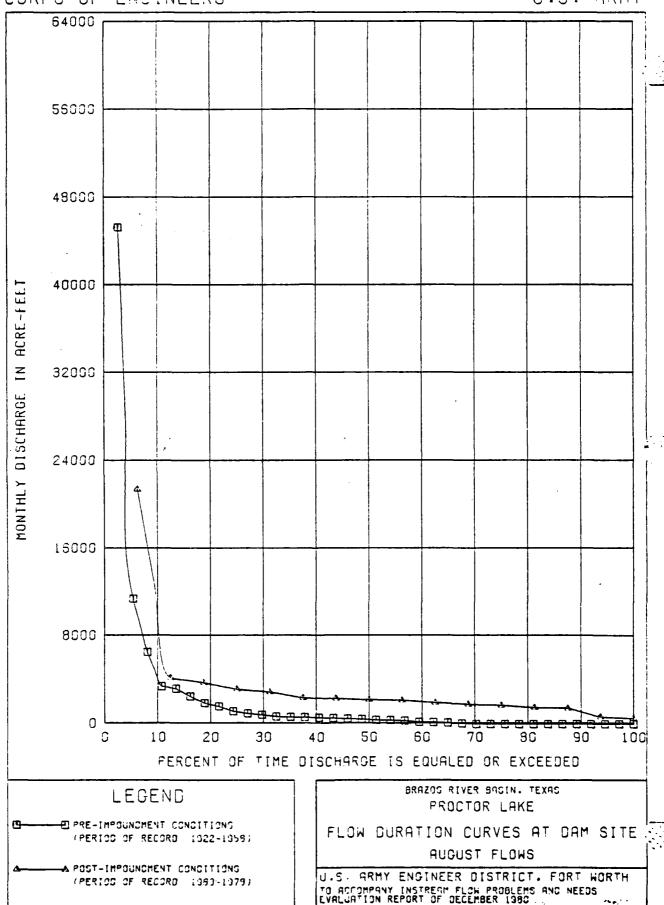


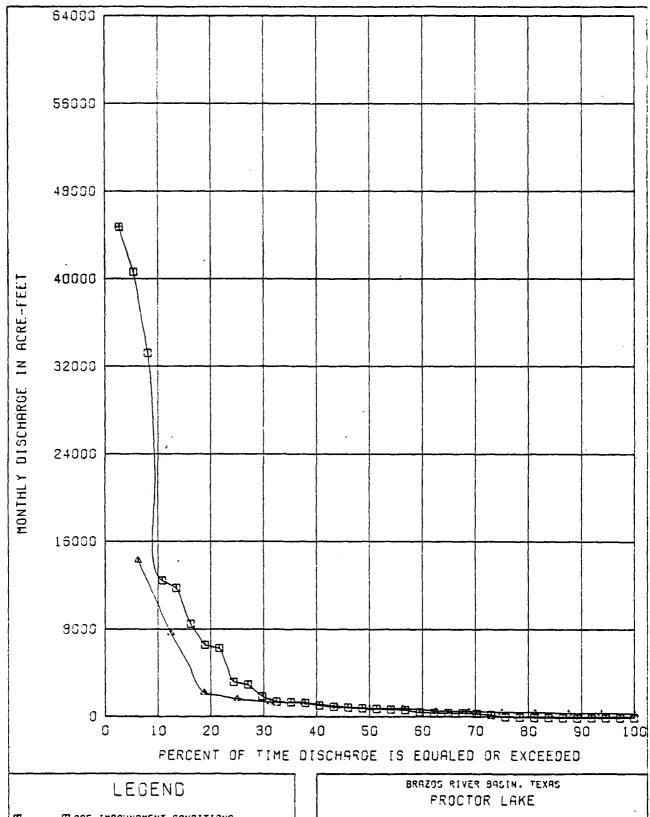


TO ASCOMPANY INSTREAM FLOW PROBLEMS AND NEEDS EVALUATION REPORT OF DECEMBER 1980

PLATE 19

PLATE ZO



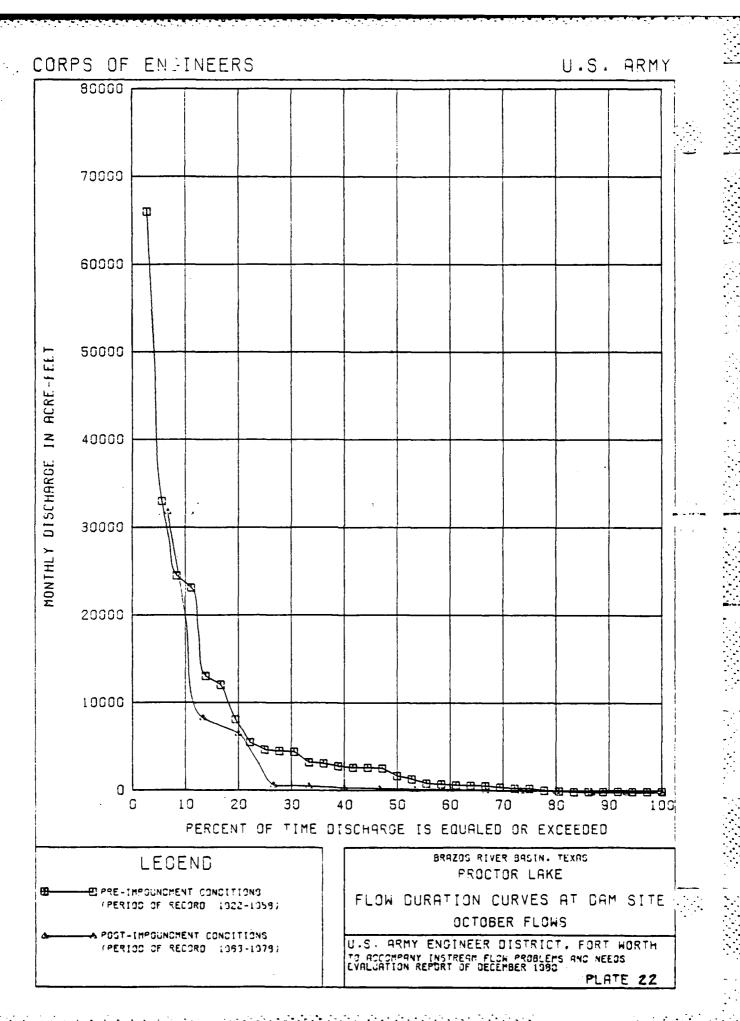


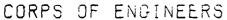
PRE-IMPOUNDMENT CONDITIONS (PERIOD OF RECORD 1022-1058)

POST-IMPOUNDMENT CONDITIONS (PERIOD OF RECORD 1953-1979)

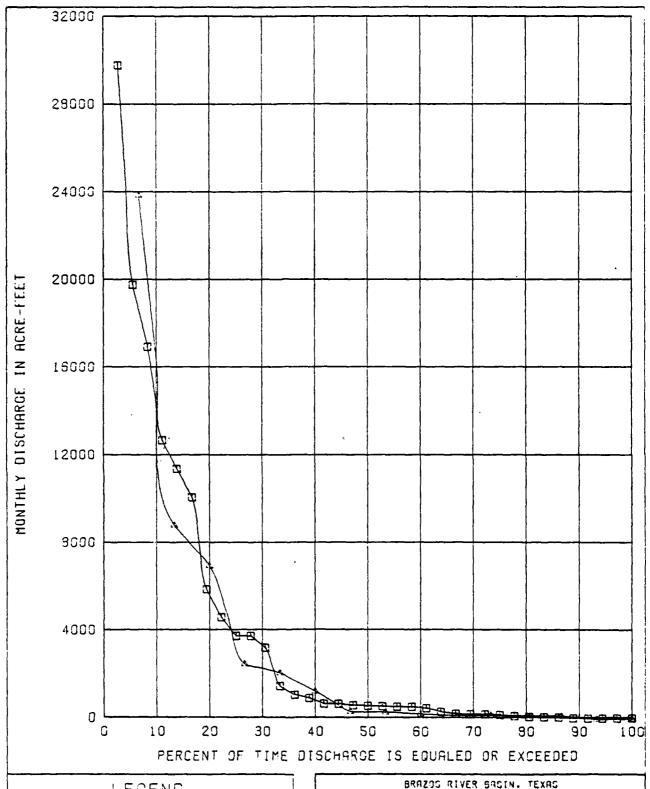
FLOW DURATION CURVES AT DAM SITE SEPTEMBER FLOWS

U.S. ARMY ENGINEER DISTRICT. FORT HORTH
TO ASCENDANY INSTREAM FLOW PROBLEMS AND NEEDS
EVALUATION REPORT OF DECEMBER 1990
PLATE 21





U.S. ARMY





-E PRE-IMPOUNDMENT CONDITIONS
(PERIOD OF RECORD 1922-1959)

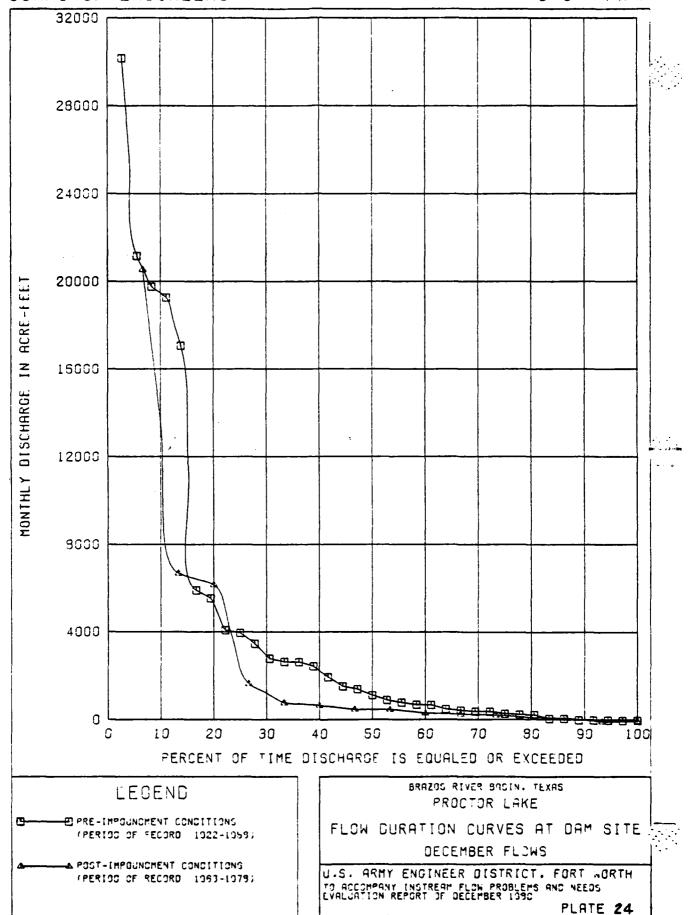
POST-IMPOUNDMENT CONDITIONS
(PERIOD OF RECORD 1993-1978)

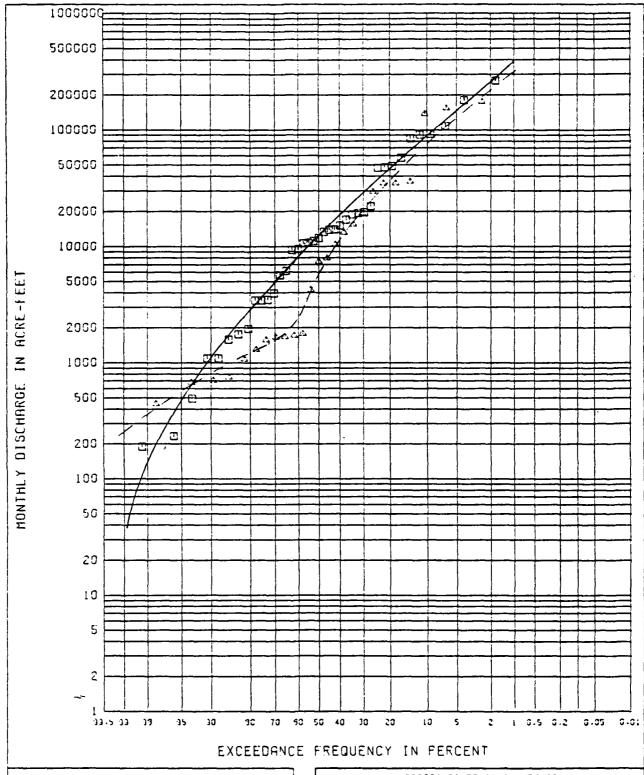
BRAZOS RIVER BASIN. TEXAS PROCTOR LAKE

FLOW DURATION CURVES AT DAM SITE NOVEMBER FLOWS

U.S. ARMY ENGINEER DISTRICT. FORT WORTH TO ACCOMPANY INSTREAM FLOW PROBLEMS AND NEEDS EVALUATION REPORT OF DECEMBER 1990

PLATE 23





- - - POST-[MPOUNCHENT CONDITIONS (PERIOD OF RECORD 1953-1979)

BRAZOS RIVER SASIN. TEXAS

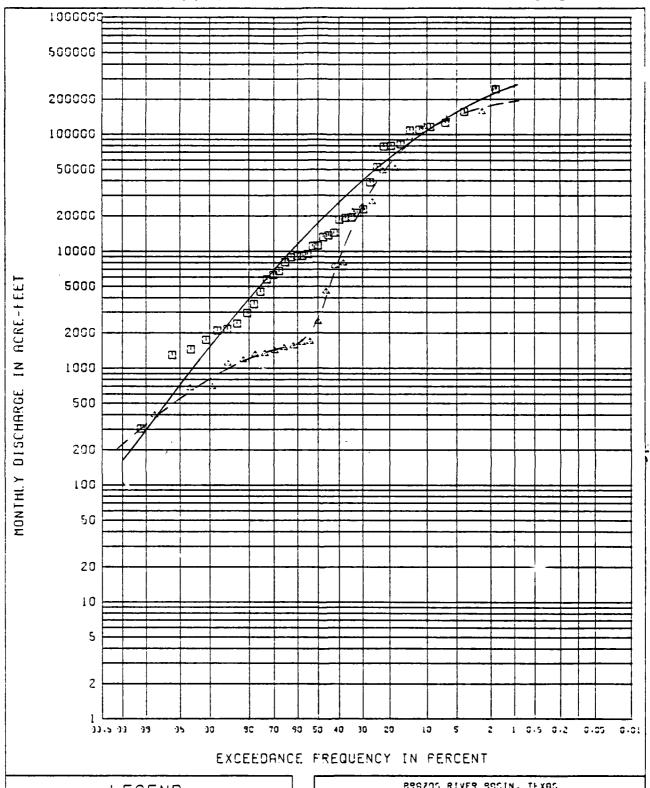
BELTON RESERVOIR

DISCHARGE-FREQUENCY RELATIONS

AT DAM SITE

JANUARY FLOWS

U.S. GRMY ENGINEER DISTRICT. FORT WORTH
TO RECEMPANY INSTREAM FLOW PROBLEMS AND NEEDS
EVALUATION REPORT OF DECEMBER 1000
PLATE I



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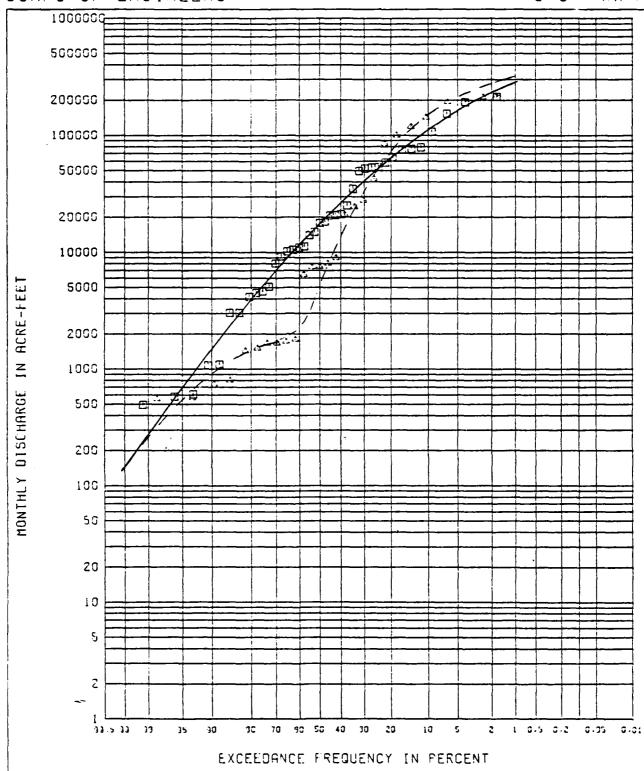
PRE-IMPOUNCHENT CONDITIONS
(PERIOD OF RECORD 1009-1949)

→ → POST-IMPOUNDMENT CONDITIONS

(PERIOD OF RECORD 1953-1979)

BRRIOS RIVER BROIN. TEXAS
BELTON RESERVOIR
DISCHARGE-FREQUENCY RELATIONS
AT DAM SITE
FEBRUARY FLOWS

U.S. ARMY ENGINEER DISTRICT, FORT WORTH
TO ACCOMPANY INSTREAM FLOW PROBLEMS AND NEEDS
EVALUATION REPORT OF DECEMBER 1990
PLATE 2



PRE-IMPOUNDMENT CONDITIONS
(PERIOD OF RECORD 1909-1949)

- - - POST-IMPOUNDMENT CONDITIONS (PERIOD OF RECORD 1953-1979)

BRRZOS RIVER BRSIN. TEXAS

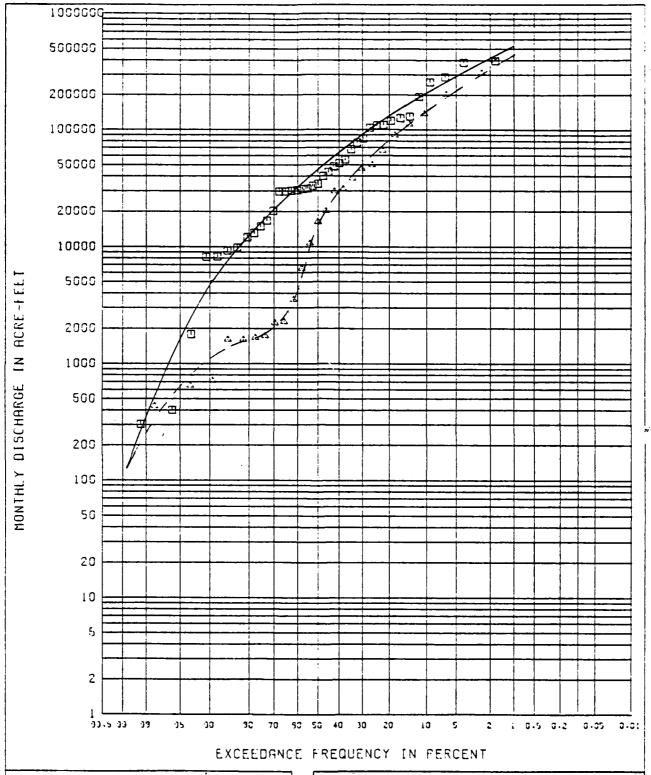
BELTON RESERVOIR

DISCHARGE-FREQUENCY RELATIONS

AT DAM SITE

MARCH FLOWS

U.S. GRMY ENGINEER DISTRICT. FORT WORTH
TO RECEMPANY INSTREAM FLOW PROBLEMS AND NEEDS
EVALUATION REPORT OF DECEMBER 1990
PLATE 5



PRE-IMPOUNDMENT CONDITIONS (PERIOD OF RECORD 1909-1945)

A -- A POST-IMPOUNDMENT CONDITIONS (PERIOD OF RECORD 1959-1979) BRAZOS RIVER BASIN. TEXAS

BELTON RESERVOIR

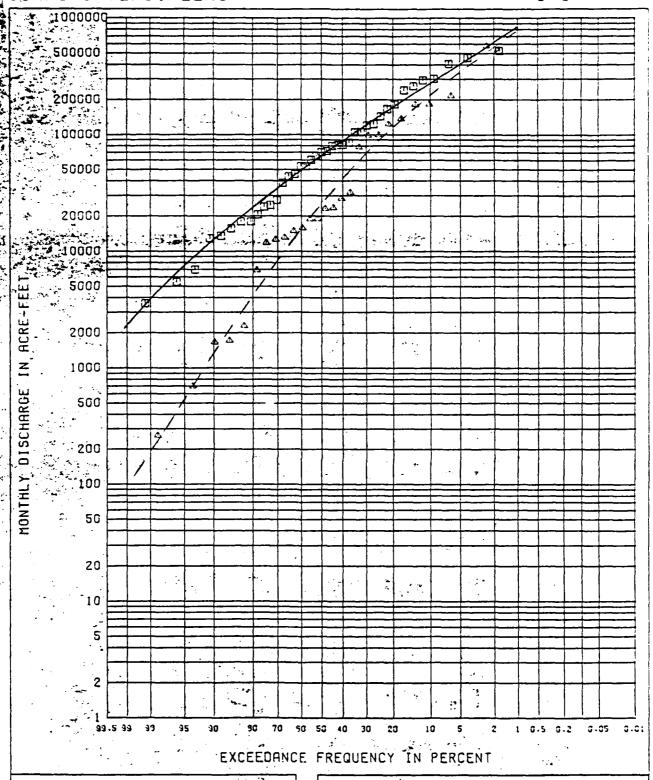
DISCHARGE-FREQUENCY RELATIONS

AT DAM SITE

APRIL FLOWS

U.S. ARMY ENGINEER DISTRICT, FORT WORTH TO ACCOMPANY INSTREMM FLOW PROBLEMS AND NEEDS EVALUATION REPORT OF DECEMBER 1990

PLATE 4



PRE-IMPOUNDMENT CONDITIONS

(PERIOD OF RECORD 1903-1946)

- — POST-IMPOUNDMENT CONDITIONS
(PERIOD OF RECORD 1993-1979)

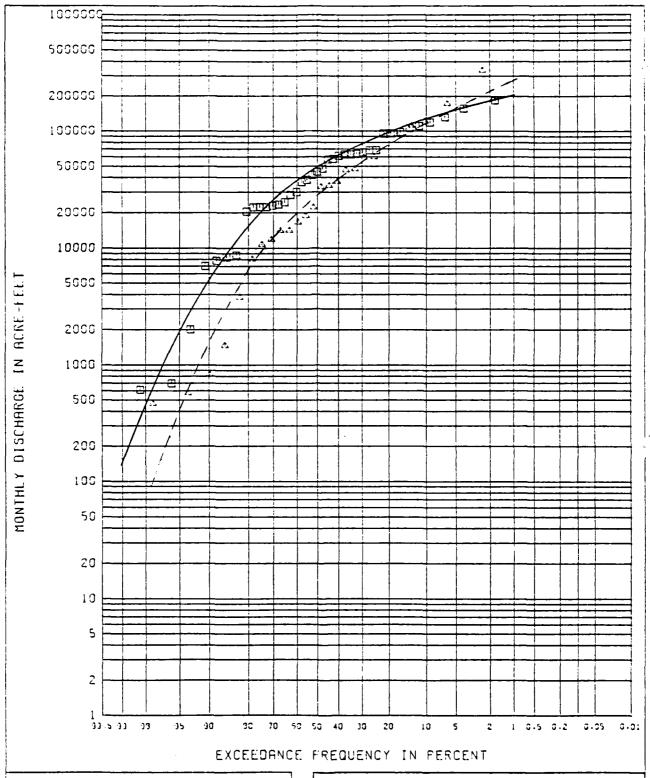
BERTON RESERVOIR

DISCHARGE-FREQUENCY RELATIONS

AT DAM SITE

MAY FLOWS

U.S. ARMY ENGINEER DISTRICT, FORT WORTH
TO ACCOMPANY INSTREAM FLOH PROBLEMS AND NEEDS
EVALUATION REPORT OF DECEMBER 1990
PLATE 5



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THE PRE-IMPOUNDMENT CONDITIONS
(PERIOD OF RECORD 1009-1045)

→ — → POST-IMPOUNDMENT CONDITIONS (PERIOD OF RECORD 1953-1979) BRAZOS RIVER BASIN. TEXAS

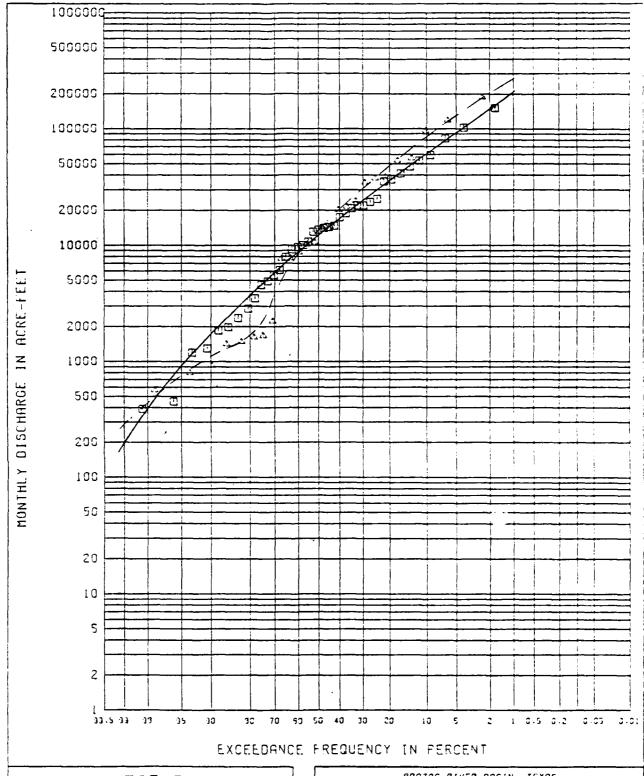
BELTON RESERVOIR

DISCHARGE-FREQUENCY RELATIONS

AT DAM SITE

JUNE FLOWS

U.S. ARMY ENGINEER DISTRICT. FORT WORTH
TO ACCOMPANY INSTREAM FLOW PROBLEMS AND NELDS
EVALUATION REPORT OF DECEMBER 1990
PLATE 6



D PRE-IMPOUNDMENT CONDITIONS
(PERIOD OF RECORD 1909-1945)

- —a POST-IMPOUNCHENT CONDITIONS
(PERIOD OF RECORD 1950-1979)

BRAZOS RIVER BASIN. TEXAS

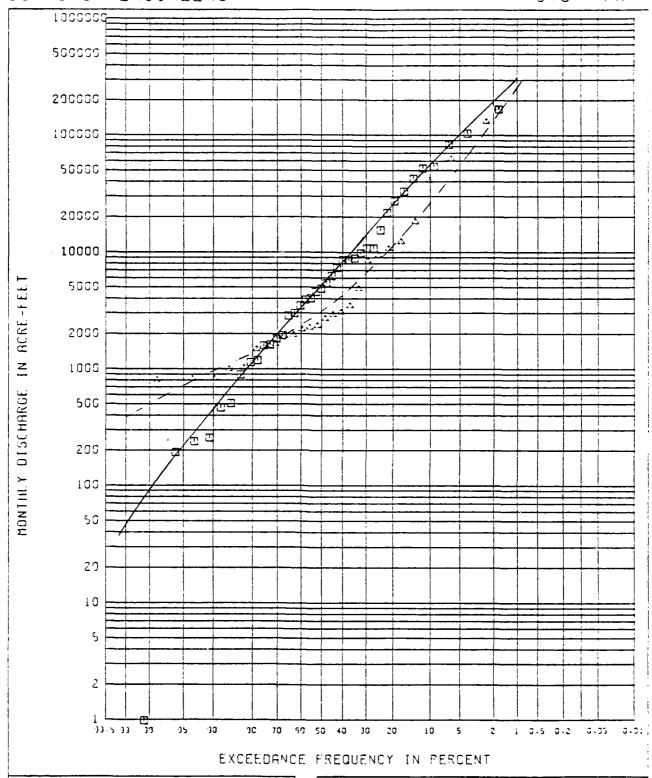
BELTON RESERVOIR

DISCHARGE-FREQUENCY RELATIONS

AT DAM SITE

JULY FLOWS

U.S. ARMY ENGINEER DISTRICT, FORT AGRIH
TO ACCOMPANY INSTREAM FLOW PROBLEMS AND NEEDS
EVALUATION REPORT OF DECEMBER 1990
FLATE 7



PRE-IMPOUNDMENT CONDITIONS

(PERIOD OF RECORD 1009-1049)

— → POST-IMPOUNCHENT CONCITIONS
(PERIOD OF RECORD 1953-1979)

BRAZOS RIVER BASIN, TEXAS

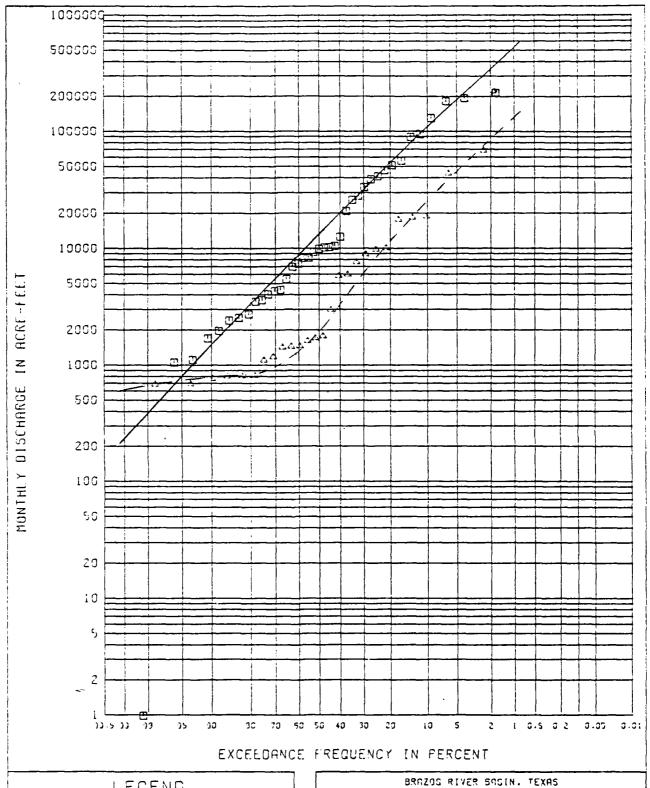
BELITON RESERVOIR

DISCHARGE-FREQUENCY RELATIONS

AT DAM SITE

AUGUST FLOWS

U.S. ARMY ENGINEER DISTRICT. FORT WORTH
TO ACCOMPANY INSTREAM FLOW PROBLEMS AND NEEDS
EVALUATION REPORT OF DECEMBER 1390
FLATE 8

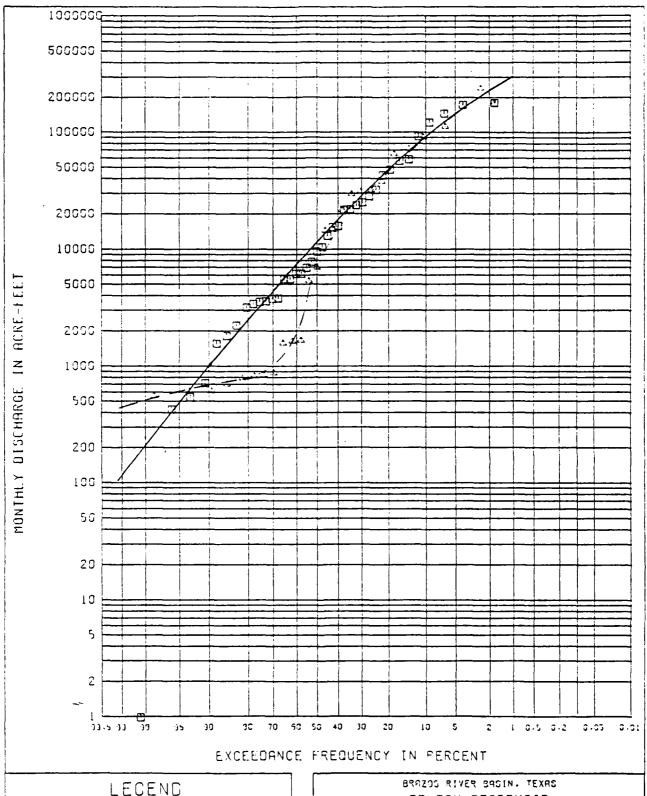


-EI PRE-IMPOUNCHENT CONDITIONS (PERIOD OF RECORD 1993-1915)

- POST-IMPOUNCHENT CONCITIONS (PERTOD OF RECORD 1950-1979)

BELTON RESERVOIR DISCHARGE-FREQUENCY RELATIONS AT DAM SITE SEPTEMBER FLOWS

U.S. ARMY ENGINEER DISTRICT. FORT WORTH TO RECEMPANY INSTREAM FLOW PROBLEMS AND NEEDS EVALUATION REPORT OF DECEMBER 1990 PLATE 9



PRE-IMPOUNDMENT CONCITIONS
(PERIOD OF RECORD 1993-1995)

- -- POST-IMPOUNDMENT CONDITIONS (PERIOD OF RECORD 1950-1979)

BRAZOS RIVER BASIN. TEXAS

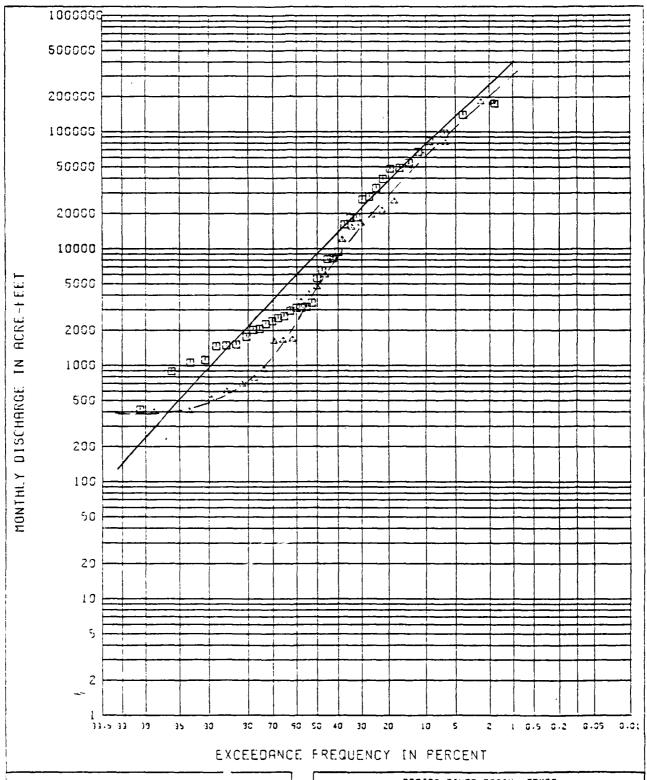
BELTON RESERVOIR

DISCHARGE - FREQUENCY RELATIONS

AT DAM SITE

OCTOBER FLOWS

U.S. ARMY ENGINEER DISTRICT. FORT WORTH TO RECEMBERY INSTREAM FLOW PROBLEMS AND NEEDS EVALUATION REPORT OF DECEMBER 1390 PLATE 10



PRE-IMPOUNDMENT CONDITIONS

(PERIOD OF RECORD 1909-1949)

- - - POGT-IMPOUNDMENT CONDITIONS (PERIOD OF RECORD 1953-1979) BRAZOS RIVER BASIN. TEXAS

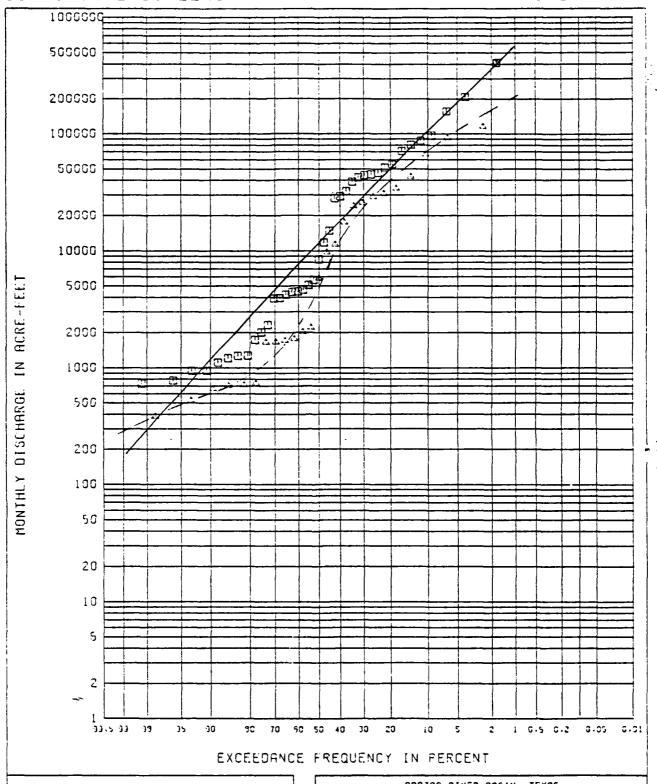
BELTON RESERVOIR

DISCHARGE-FREQUENCY RELATIONS

AT DAM SITE

NOVEMBER FLOWS

U.S. ARMY ENGINEER DISTRICT, FORT WORTH TO ACCOMPANY INSTREAM FLOW PROBLEMS AND NEEDS EVALUATION REPORT OF DECEMBER 1990 PLATE !!



PRE-IMPOUNDMENT CONDITIONS
(PERIOD OF RECORD 1909-1949)

- — POST-IMPOUNDMENT CONCITIONS
(PERIOD OF RECORD 1953-1979)

BRAZOS RIVER BASIN. TEXAS

BELTON RESERVOIR

DISCHARGE-FREQUENCY RELATIONS

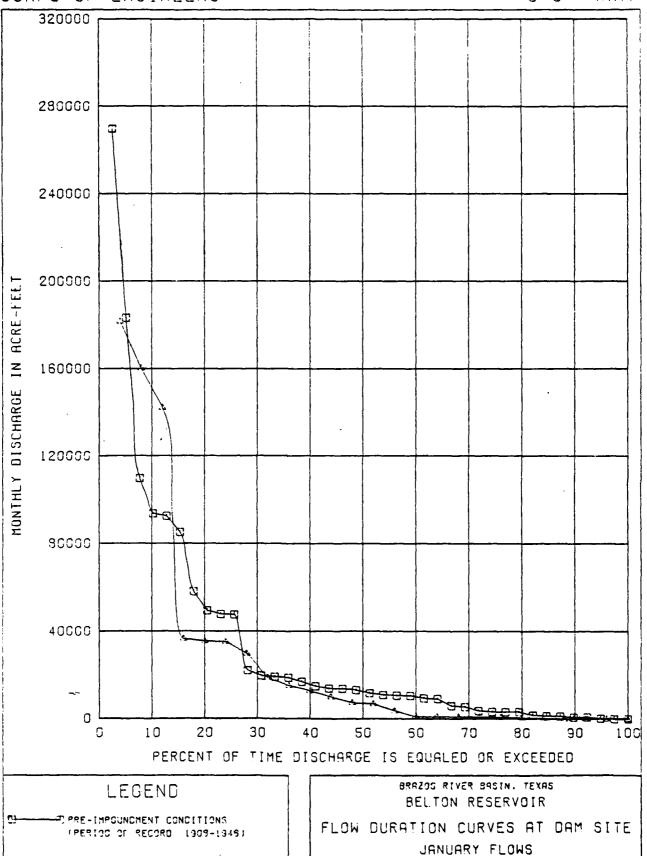
AT DAM SITE

DECEMBER FLOWS

U.S. ARMY ENGINEER DISTRICT. FORT WORTH
TO ACCOMPANY INSTREAM FLOW PROBLEMS AND NEEDS
EVALUATION REPORT OF DECEMBER 1980
PLATE 12

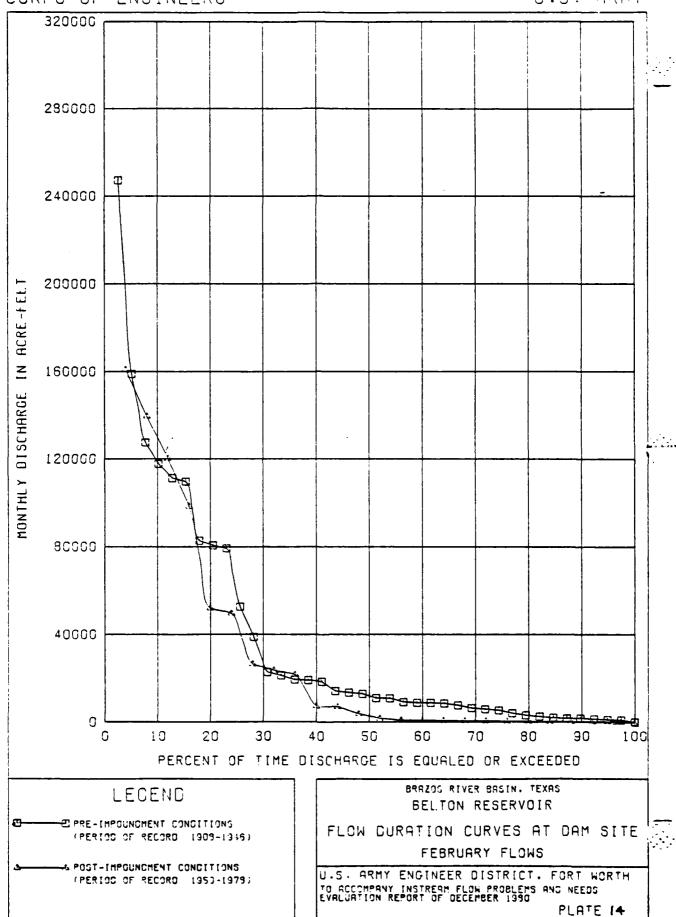
POST-IMPOUNGMENT CONCITIONS

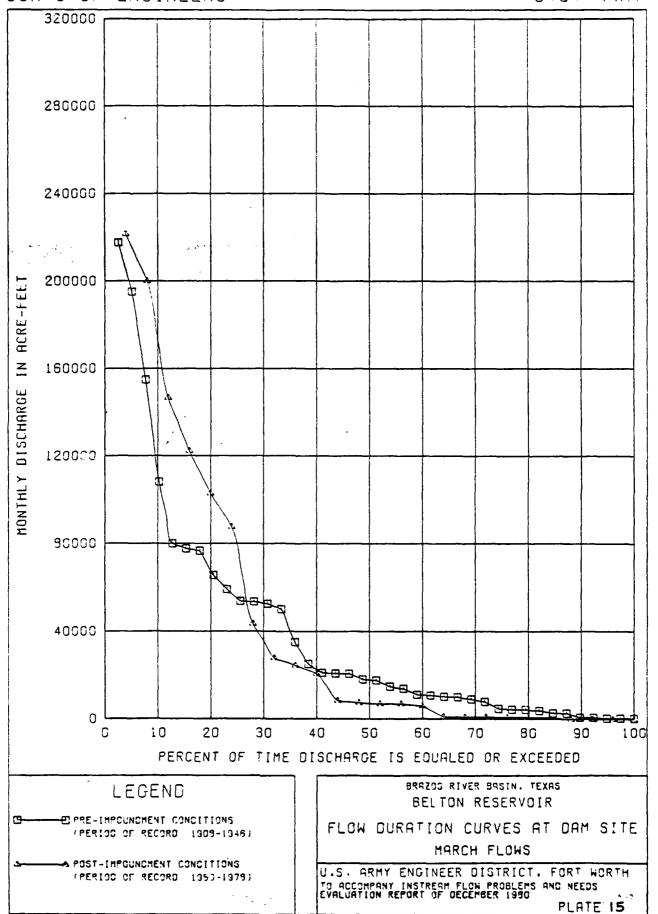
(PERIOD OF RECORD 1950-1979)



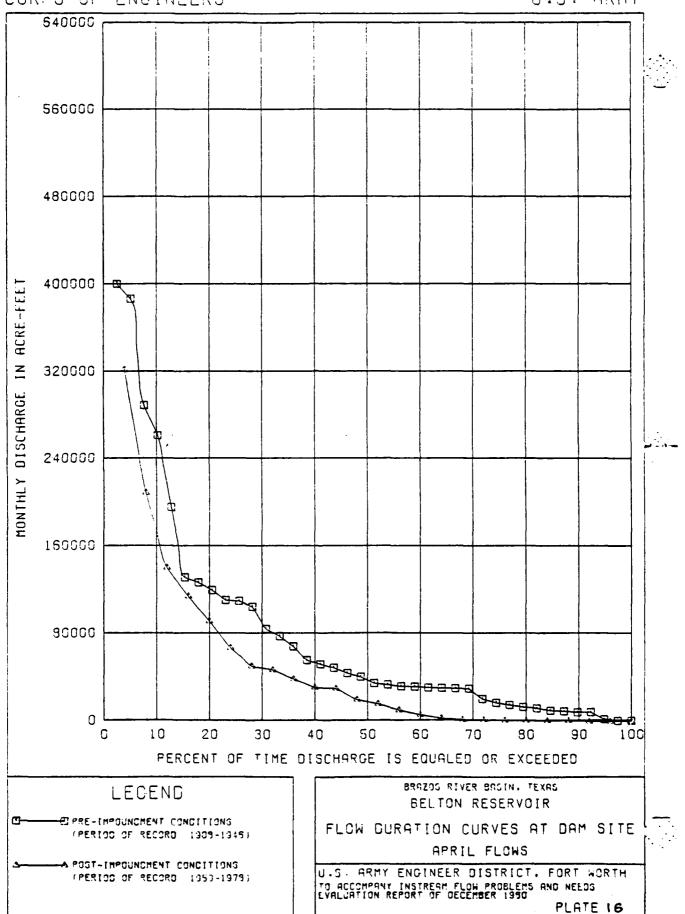
U.S. ARMY ENGINEER DISTRICT. FORT WORTH TO ACCOMPANY INSTREAM FLOW PROBLEMS AND NEEDS EVALUATION REPORT OF DECEMBER 1990

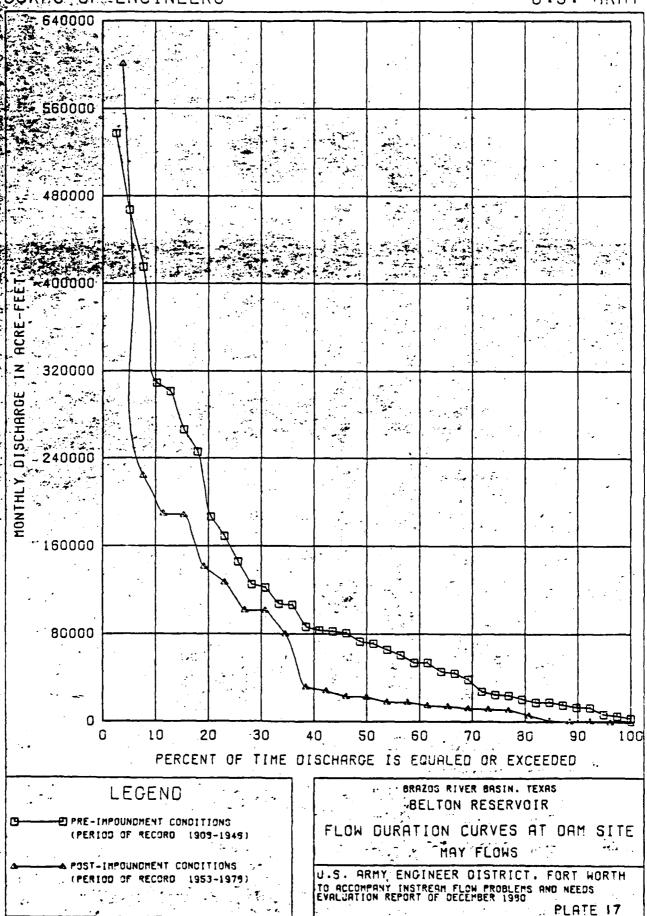
PLATE 13

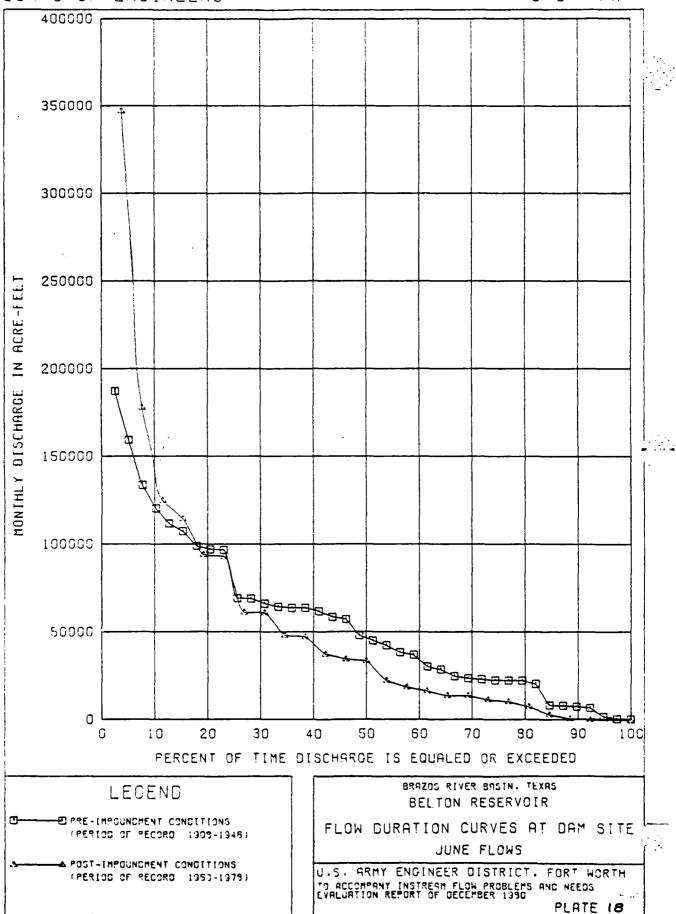












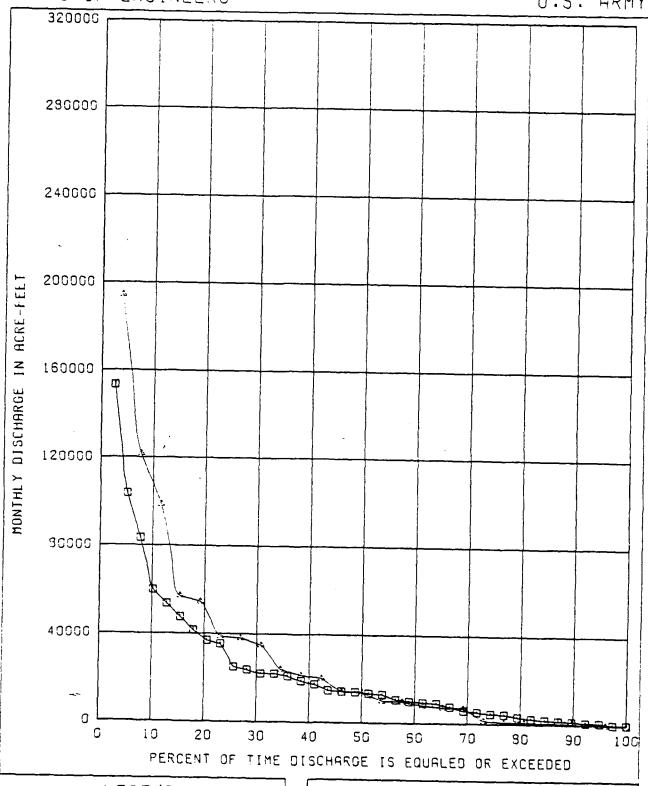


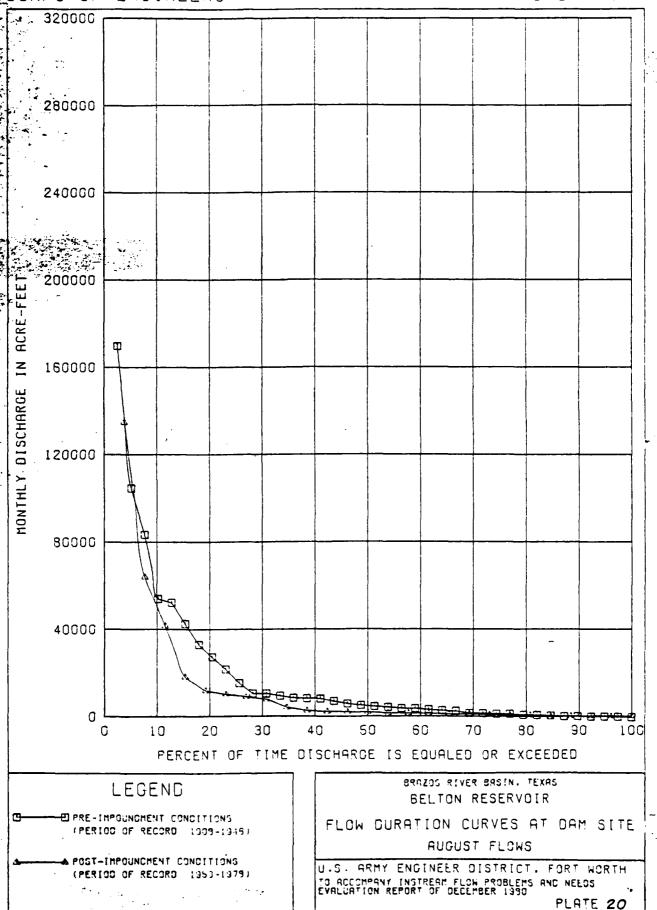
图 PRE-IMPOUNDMENT CONCITIONS (PERIOD OF RECORD 1003-1345)

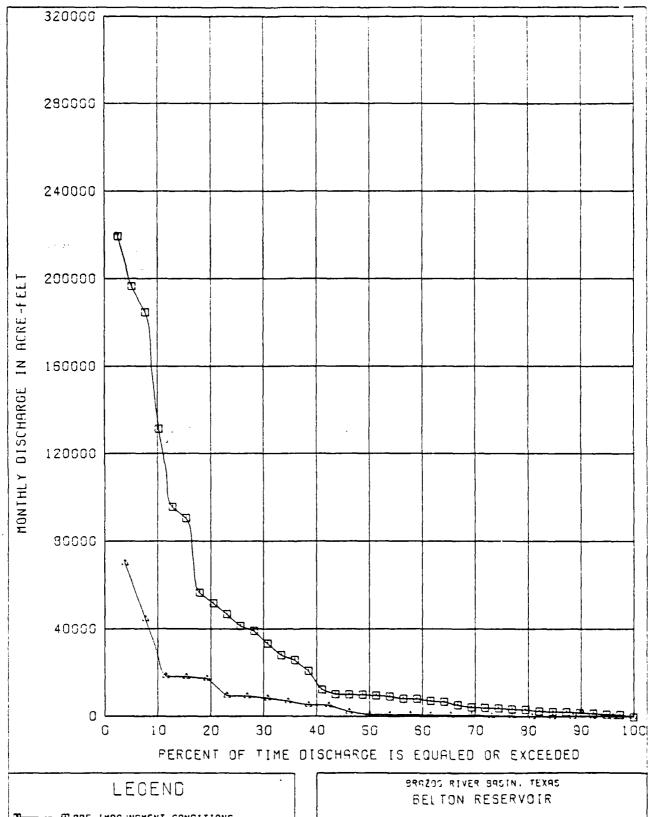
A POST-IMPOUNDMENT CONDITIONS (PERIOD OF RECORD 1950-1979; BRAZOS RIVER BASIN. TEXAS BELTON RESERVOIR

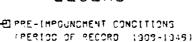
FLOW DURATION CURVES AT DAM SITE

JULY FLOWS

U.S. ARMY ENGINEER DISTRICT. FORT WORTH TO ACCOMPANY INSTREAM FLOW PROBLEMS AND NEEDS

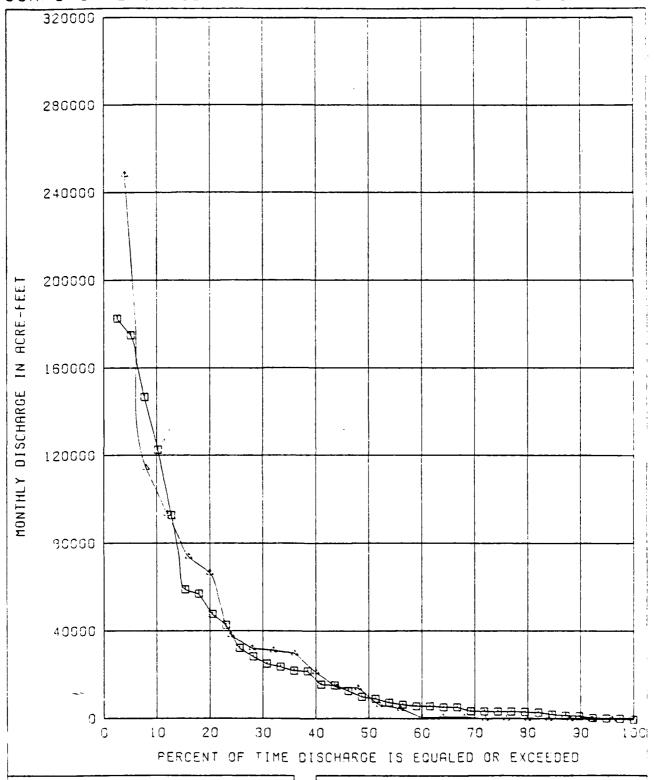






POST-IMPOUNDMENT CONDITIONS (PERIOD OF RECORD 1959-1979) FLOW DURATION CURVES AT DAM SITE SEPTEMBER FLOWS

U.S. ARMY ENGINEER DISTRICT. FORT WORTH TO GCCOMPANY INSTREAM FLOW PROBLEMS AND NEEDS EVALUATION REPORT OF DECEMBER 1990 PLATE 21



—— ■ PRE-IMPOUNDMENT CONCITIONS

(PERIOD OF PECORO 1909-1949)

POST-IMPOUNCHENT CONDITIONS
(PERIOD OF RECORD (1950-1979))

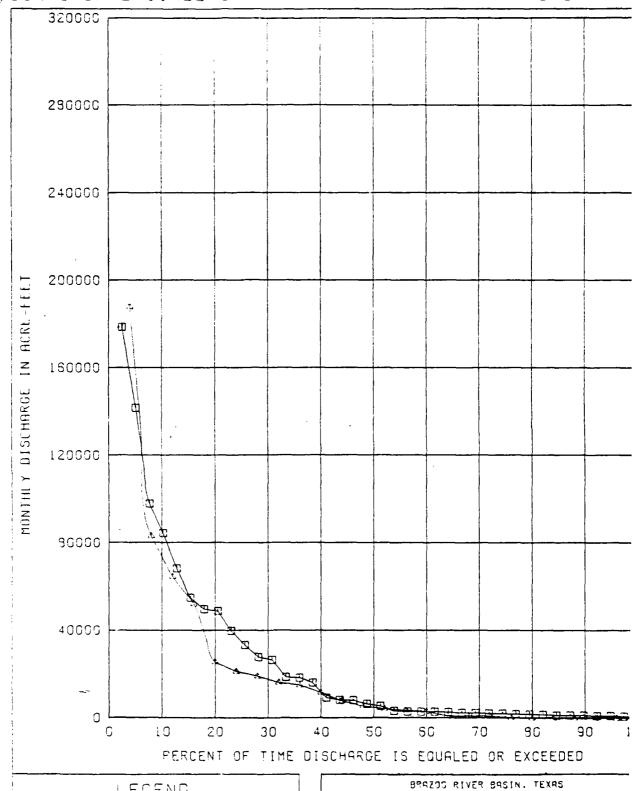
BRAZOS RIVER BASIN, TEXAS BELTON RESERVOIR

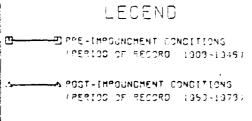
FLOW DURATION CURVES AT DAM SITE

OCTOBER FLOWS

U.S. ARMY ENGINEER DISTRICT. FORT WORTH TO ACCOMPANY INSTREAM FLOW PROBLEMS AND NEEDS EVALUATION REPORT OF DECEMBER 1990

PLATE 22





BELTON RESERVOIR
FLOW DURATION CURVES AT DAM SIT
NOVEMBER FLOWS

U.S. ARMY ENGINEER DISTRICT, FORT WORTH TO ACCOMPANY INSTREAM FLOW PROBLEMS AND NEEDS EVALUATION REPORT OF DECEMBER 1990 PLATE 2

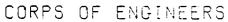
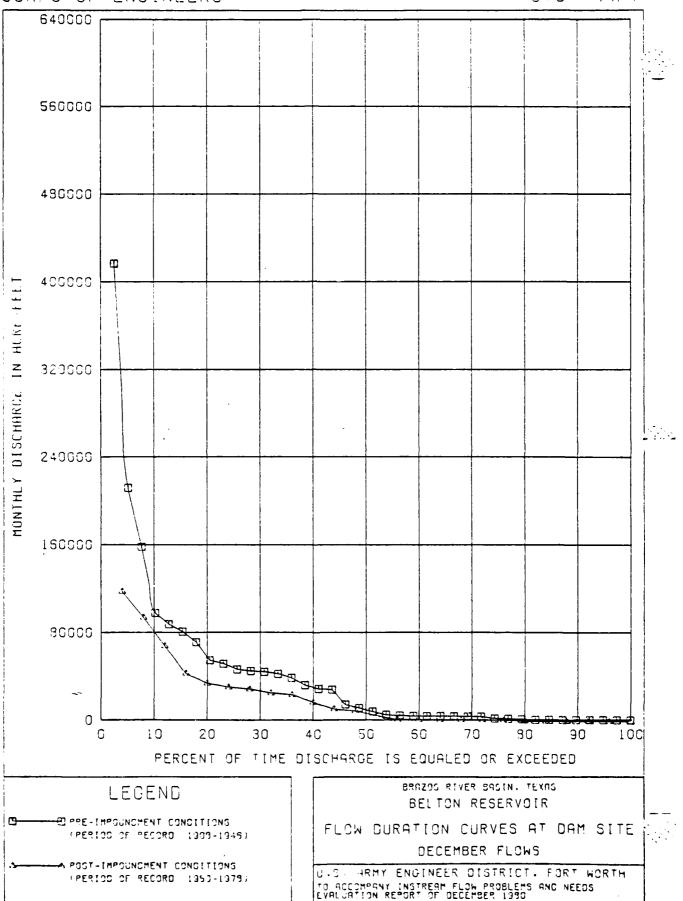
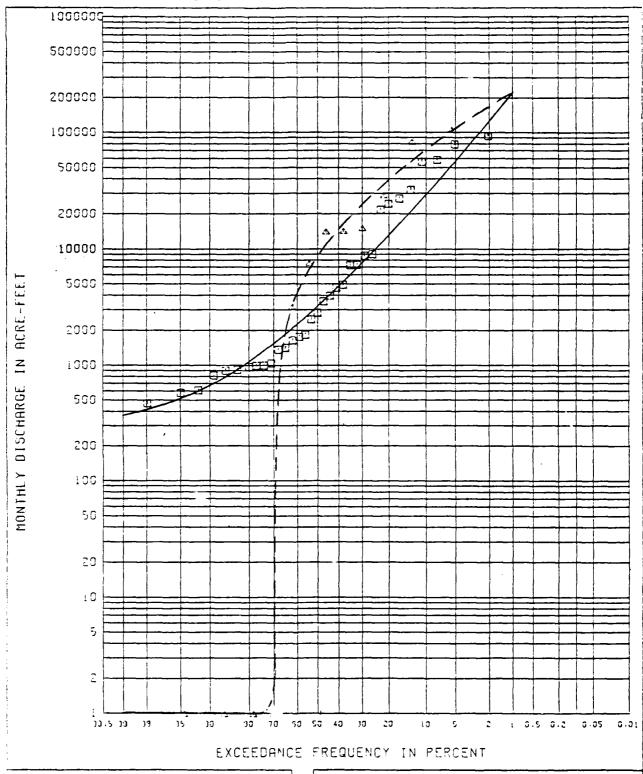


PLATE 24



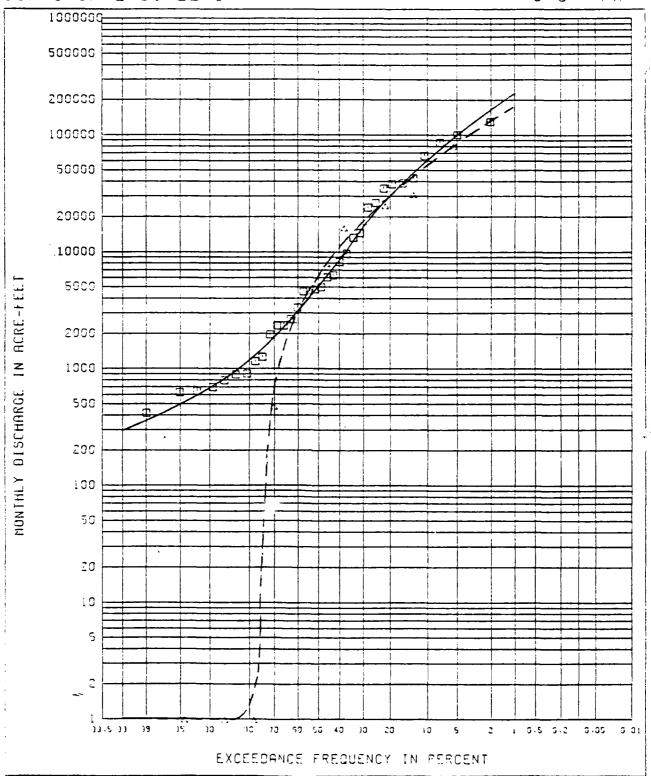


PRE-IMPOUNDMENT CONDITIONS
(PERIOD OF PECORO 1924-1957)

- - - POST-IMPOUNDMENT CONDITIONS
(PERIOD OF RECORD (367-1373)

BRAZOG RIVER BASIN. TEXAS
STILLHOUSE HOLLOW LAKE
DISCHARGE-FREQUENCY RELATIONS
AT DAM SITE
JANUARY FLOWS

U.S. ARMY ENGINEER DISTRICT. FORT WORTH TO ACCOMPANY INSTREMM FLOW PROBLEMS AND NEEDS EVALUATION REPORT OF DECEMBER 1980 PLATE 17



(PERIOD OF RECORD 1324-1357)

POST-IMPOUNDMENT CONDITIONS
(PERIOD OF RECORD .397-1379)

STRICT RIVER BASIN. TEXAS

STILLHOUSE HOLLOW LAKE

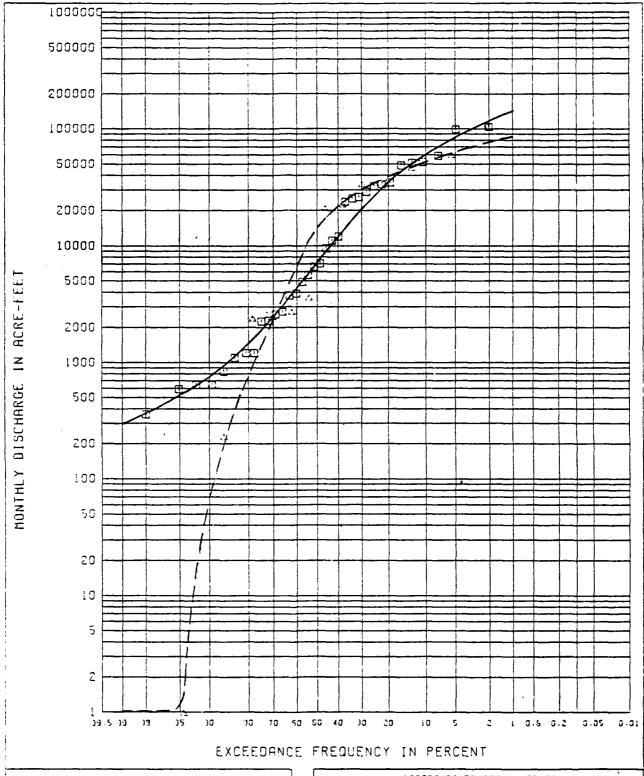
DISCHARGE-FREQUENCY RELATIONS

AT DAM SITE

FEBRUARY FLOWS

U.S. ARMY ENGINEER DISTRICT, FORT WORTH TO ASCOMPANY INSTREAM FLOW PROBLEMS AND NEEDS EVALUATION REPORT OF DECEMBER 1990.

PLATE 2



PRE-IMPOUNDMENT CONDITIONS

(PERIOD OF RECORD 1924-1957)

- - - POST-IMPOUNDMENT CONDITIONS
(PERIOD OF RECORD 1997-1979)

BRAZOS RIVER BASIN. TEXAS

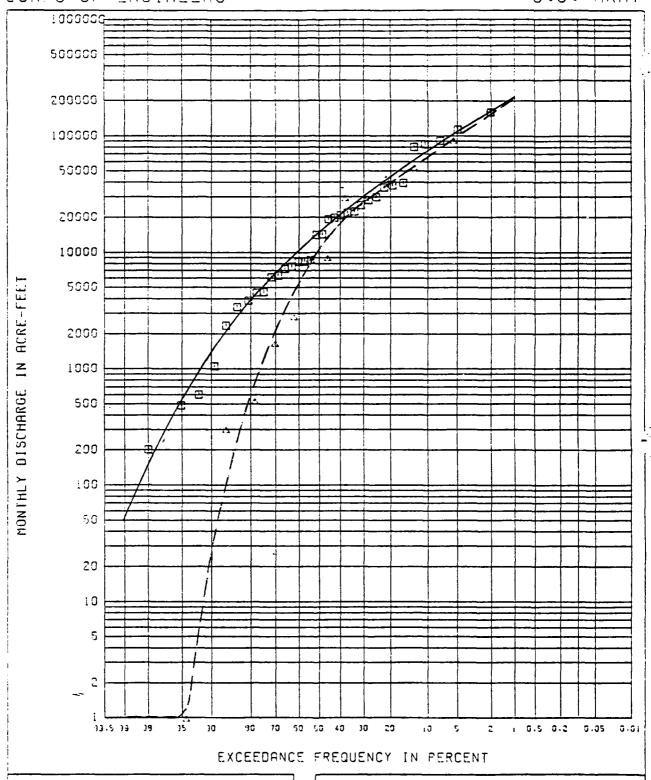
STILLHOUSE HOLLOW LAKE

DISCHARGE-FREQUENCY RELATIONS

AT DAM SITE

MARCH FLOWS

U.S. ARMY ENGINEER DISTRICT. FORT WORTH
TO ACCOMPANY INSTREAM FLOW PROBLEMS AND NEEDS
EVALUATION REPORT OF DECEMBER 1980 PLATE 3



PRE-IMPOUNDMENT CONDITIONS
(PERIOD OF RECORD 1924-1957)

- -- POST-IMPOUNDMENT CONDITIONS
(PERIOD OF RECORD 1997-1079)

BRAZOS RIVER BASIN. TEXAS

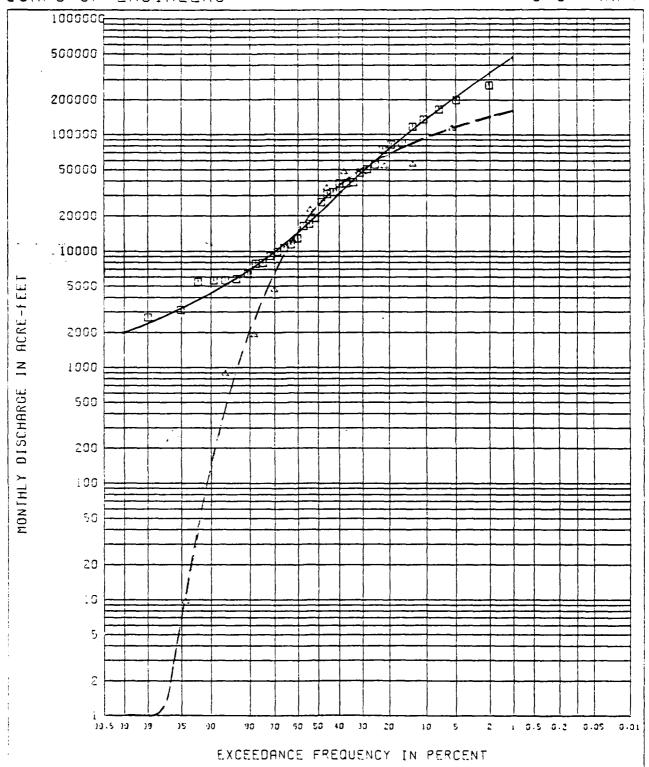
STILLHOUSE HOLLOW LAKE

DISCHARGE-FREQUENCY RELATIONS

AT DAM SITE

APRIL FLOWS

U.S. ARMY ENGINEER DISTRICT. FORT WORTH TO ACCOMPANY INSTREMM FLOW PROBLEMS AND NEEDS EVALUATION REPORT OF DECEMBER 1980 PLATE 4



LEGEND

☐ PRE-IMPOUNDMENT CONDITIONS

(PERIOD OF RECORD 1924-1957)

- - -- POST-IMPOUNDMENT CONDITIONS
(PERIOD OF RECORD 1957-1979)

BRRZOS RIVER BASIN. TEXAS

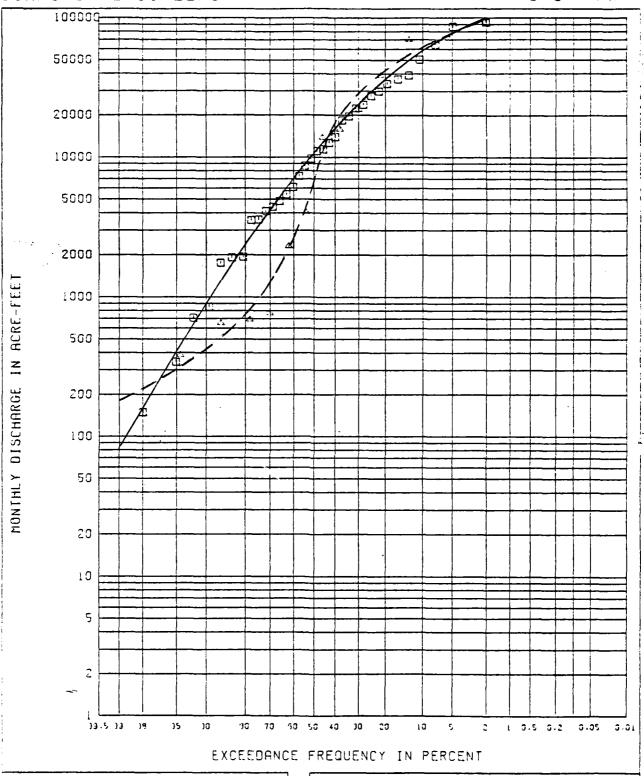
STILLHOUSE HOLLOW LAKE

DISCHARGE-FREQUENCY RELATIONS

AT DAM SITE

MAY FLOWS

U.S. ARMY ENGINEER DISTRICT. FORT WORTH
TO ACCOMPANY INSTREAM FLOW PROBLEMS AND NEEDS
EVALUATION REPORT OF DECEMBER 1980
PLATE 5



PRE-IMPOUNDMENT CONDITIONS
(PERIOD OF PECORO (924-1957)

— — POST-IMPOUNDMENT CONDITIONS (PERIOD OF RECORD 1997-1979) BRAZOS RIVER BASIN. TEXAS

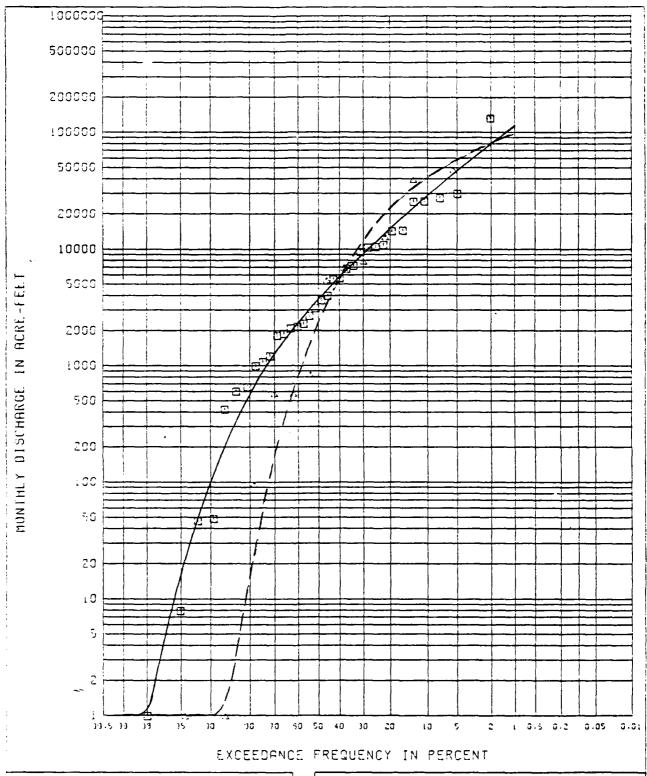
STILLHOUSE HOLLOW LAKE

DISCHARGE-FREQUENCY RELATIONS

AT DAM SITE

JUNE FLOWS

U.S. ARMY ENGINEER DISTRICT. FORT WORTH TO ACCOMPANY INSTREAM FLOW PROBLEMS AND NEEDS EVALUATION REPORT OF DECEMBER 1980 PLATE 6



PRE-IMPOUNDMENT CONDITIONS (PERIOD OF RECORD 1924-1957)

- - - POST-IMPOUNDMENT CONDITIONS
(PERIOD OF RECORD 1967-1979)

BRAZOS RIVER BASIN. TEXAS

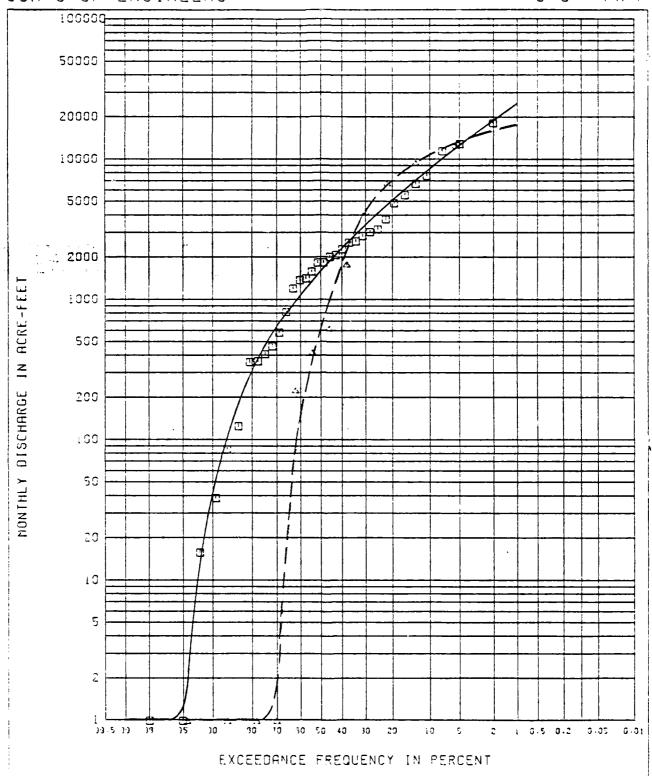
STILLHOUSE HOLLOW LAKE

DISCHARGE-FREQUENCY RELATIONS

AT DAM SITE

JULY FLOWS

U.S. ARMY ENGINEER DISTRICT. FORT WORTH TO ACCOMPANY INSTREAM FLOH PROBLEMS AND MEEDS EVALUATION REPORT OF DECEMBER 1980 PLATE 7

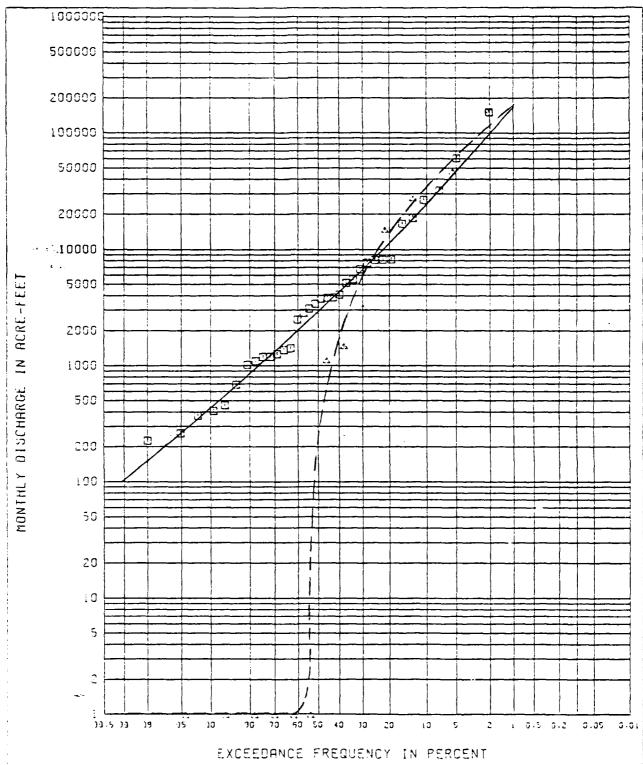


PRE-IMPOUNDMENT CONDITIONS
(PERIOD OF RECORD 1924-1957)

- -- POST-IMPOUNDMENT CONDITIONS
(PERIOD OF RECORD (1957-1973)

BRAZOS RIVER BASIN. TEXAS
STILLHOUSE HOLLOW LAKE
DISCHARGE-FREQUENCY RELATIONS
AT DAM SITE
AUGUST FLOWS

U.S. ARMY ENGINEER DISTRICT. FORT WORTH
TO ACCOMPANY INSTREMM FLOW PROBLEMS AND NEEDS
EVALUATION REPORT OF DECEMBER 1990
PLATE 8



PRE-IMPOUNDMENT CONDITIONS
(PERIOD OF RECORD 1924-1957)

- - - POST-IMPOUNDMENT CONDITIONS
(PERIOD OF PECORD 1997-1979)

BROZDS RIVER BOSIN. TEXAS

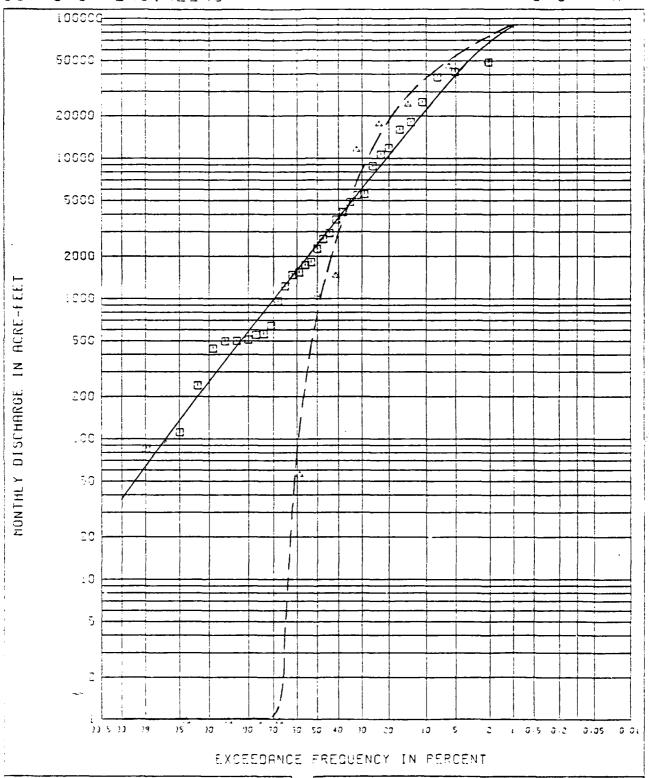
STILLHOUSE HOLLOW LAKE

DISCHARGE-FREQUENCY RELATIONS

AT DAM SITE

SEPTEMBER FLOWS

U.S. ARMY ENGINEER DISTRICT. FORT WORTH
TO ASCOMPANY INSTREAM FLOH PROBLEMS AND NEEDS
EVALUATION REPORT OF DECEMBER 1380
PLATE 9

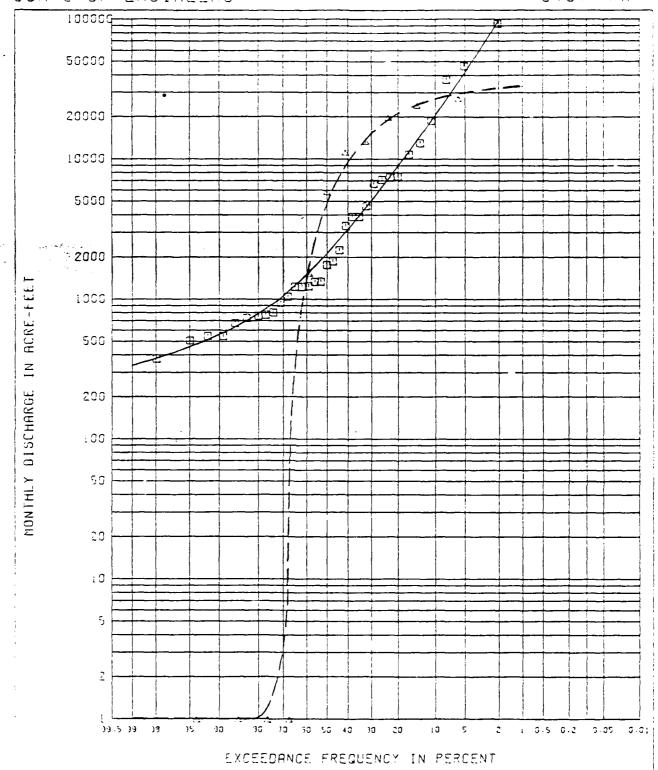


四 ---- 型 PRE-IMPOUNDMENT CONDITIONS
(PERIOD OF PECORD (1924-1057))

— — POST-IMPOUNDMENT CONDITIONS (PERIOD OF RECORD 1967-1979) BRAZOS RIVER BASIN. TEXAS
STILLHOUSE HOLLOW LAKE
DISCHARGE-FREQUENCY RELATIONS
AT DAM SITE
OCTOBER FLOWS

U.S. CRMY ENGINEER DISTRICT. FORT WORTH TO ACCOMPANY INSTREAM FLOM PROBLEMS AND MEEDS EVALUATION REPORT OF DECEMBER 1990.

PLATE 10



The state of the s

 BRAZOS RIVER BASIN. TEXAS

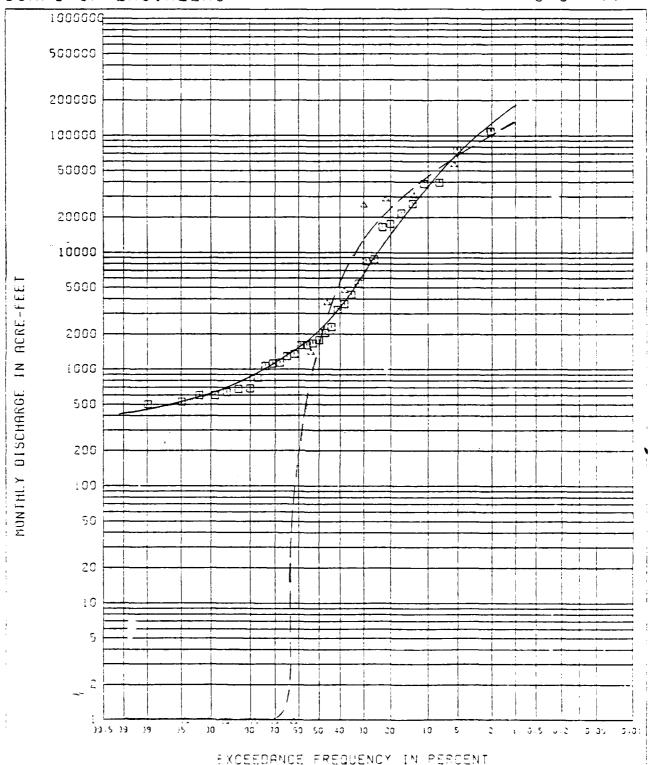
STILLHOUSE HOLLOW LAKE

DISCHARGE-FREQUENCY RELATIONS

AT DAM SITE

NOVEMBER FLOWS

U.S. ARMY ENGINEER DISTRICT. FORT WORTH TO ACCOMPANY INSTREAM FLOW PROBLEMS AND NEEDS EVALUATION REPORT OF DECEMBER 1990 PLATE !!



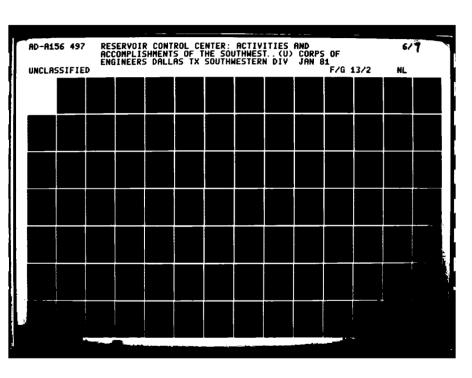
PRE-IMPOUNDMENT CONDITIONS

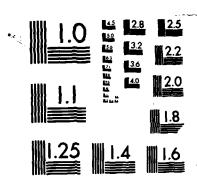
(PERIOD OF PECOND 1924-1957)

 — — A POST-IMPOUNDMENT CONDITIONS (PERIOD OF PECORD 1997-1973) BRRZOS RIVER BOSIN. TEXAS
STILLHOUSE HOLLOW LAKE
DISCHARGE-FREQUENCY RELATIONS
AT DAM SITE
DECEMBER FLOWS

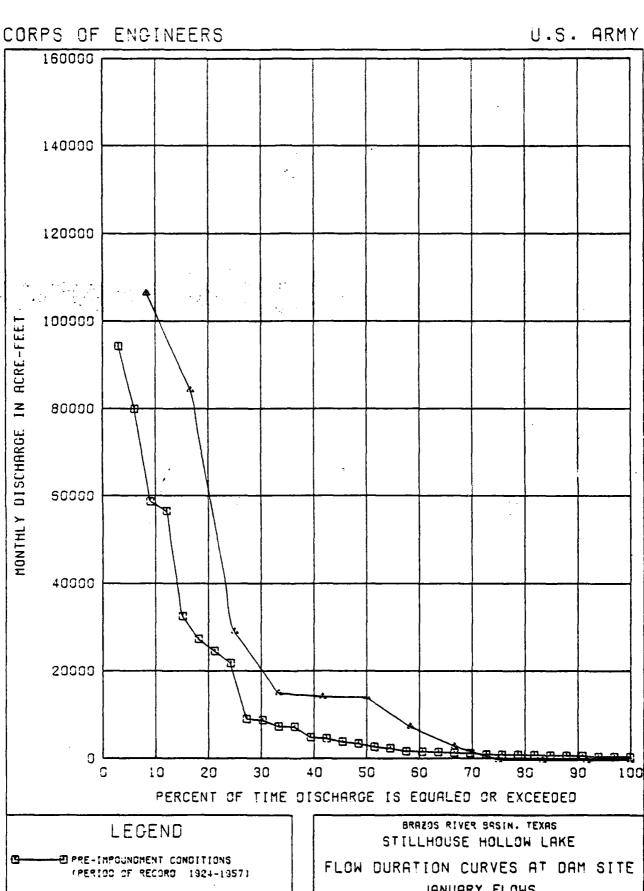
U.3. ARMY ENGINEER DISTRICT, FORT WORTH TO ROCCHPANY INSTREAM FLOW PROBLEMS AND NEEDS EVALUATION REPORT OF DECEMBER 1990

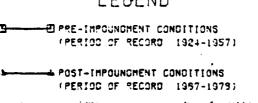
PLATE 12





MICROCOPY RESOLUTION TEST CHART NATIONAL BUREAU OF STANDARDS-1963-A

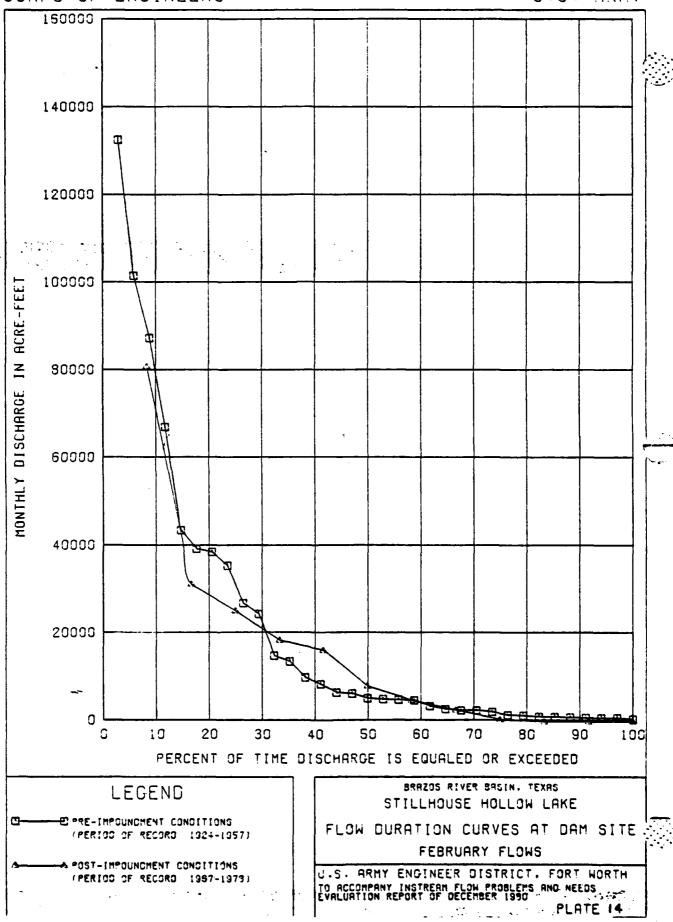




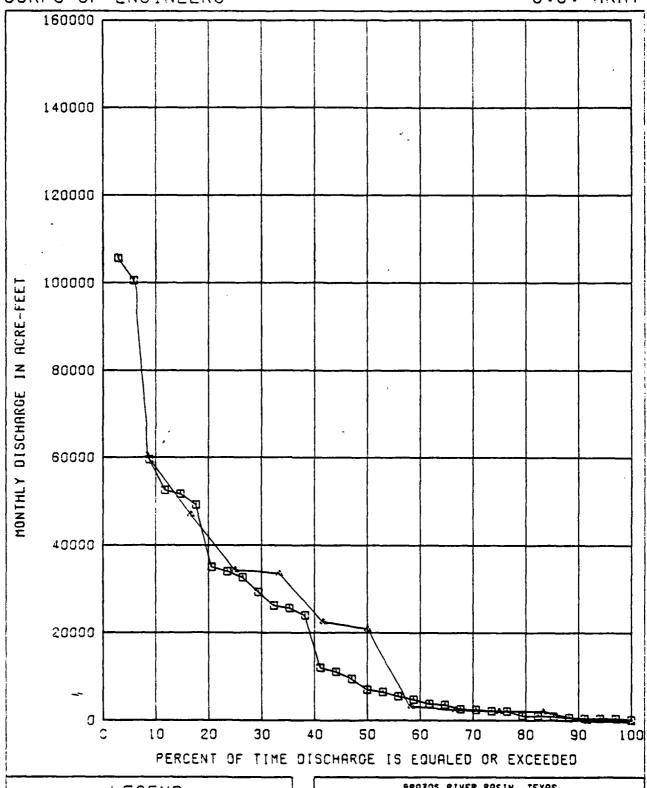
JANUARY FLOWS

U.S. ARMY ENGINEER DISTRICT. FORT WORTH TO ACCOMPANY INSTREAM FLOW PROBLEMS AND NEEDS EVALUATION REPORT OF DECEMBER 1990











-EPPE-IMPOUNDMENT CONDITIONS (PERIOD OF RECORD 1924-1957)

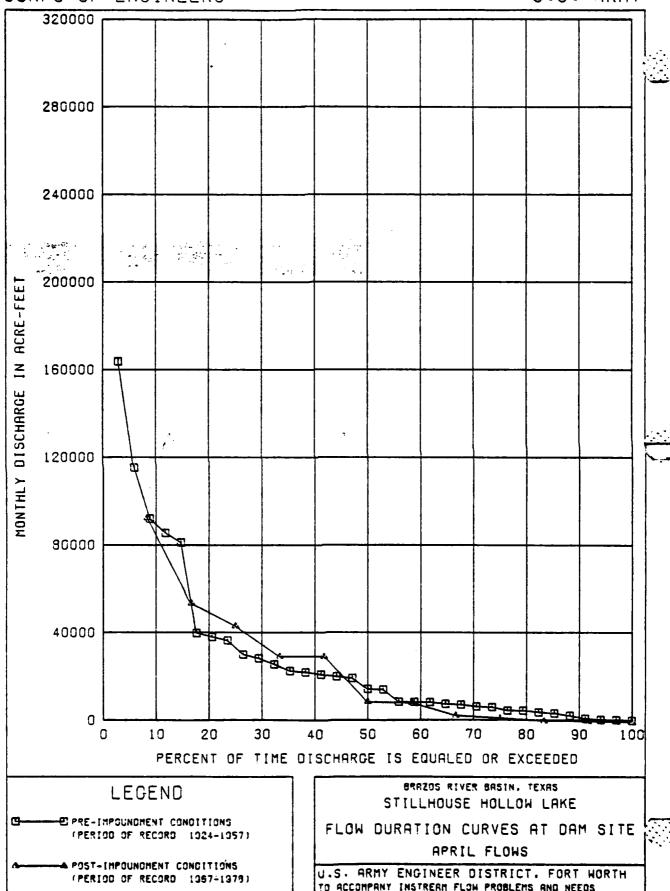
POST-IMPOUNGMENT CONDITIONS
(PERIOD OF RECORD 1997-1979)

BRAZOS RIVER BASIN. TEXAS
STILLHOUSE HOLLOW LAKE

FLOW DURATION CURVES AT DAM SITE MARCH FLOWS

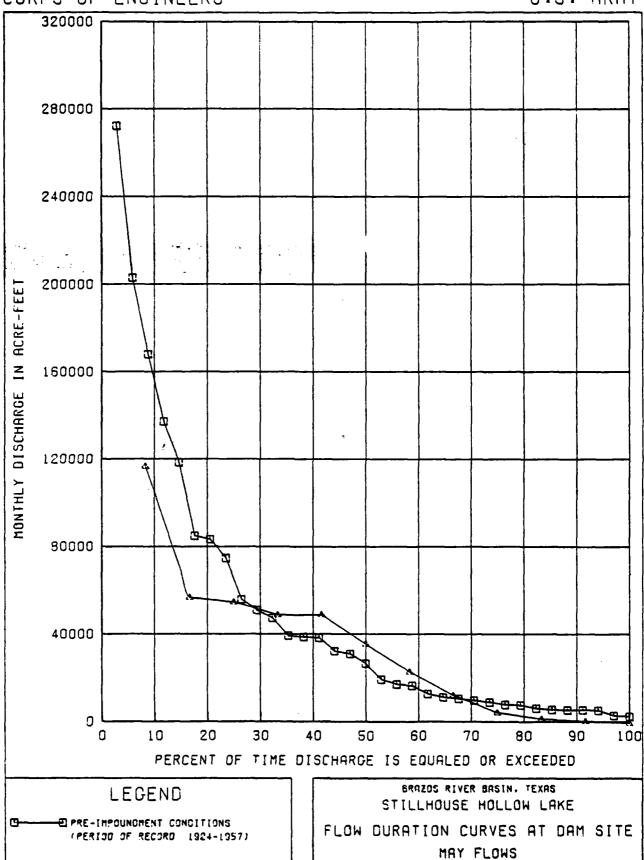
U.S. ARMY ENGINEER DISTRICT. FORT WORTH
TO ACCOMPANY INSTREAM FLOW PROBLEMS AND NEEDS
EVALUATION REPORT OF DECEMBER 1990
PLATE 15



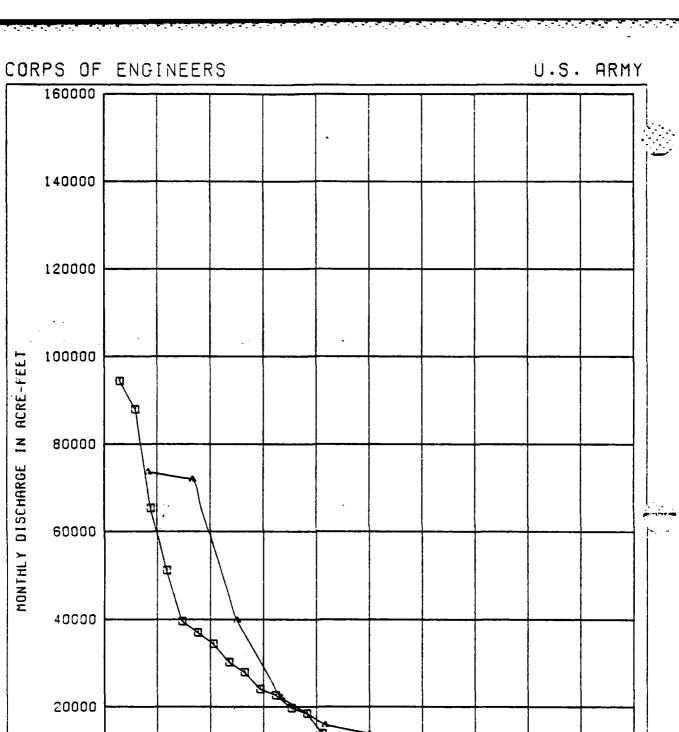


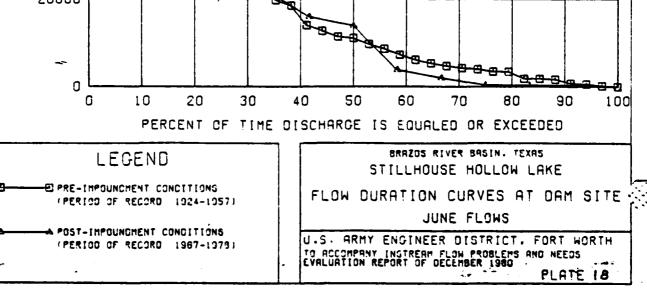
POST-IMPOUNDMENT CONDITIÓNS

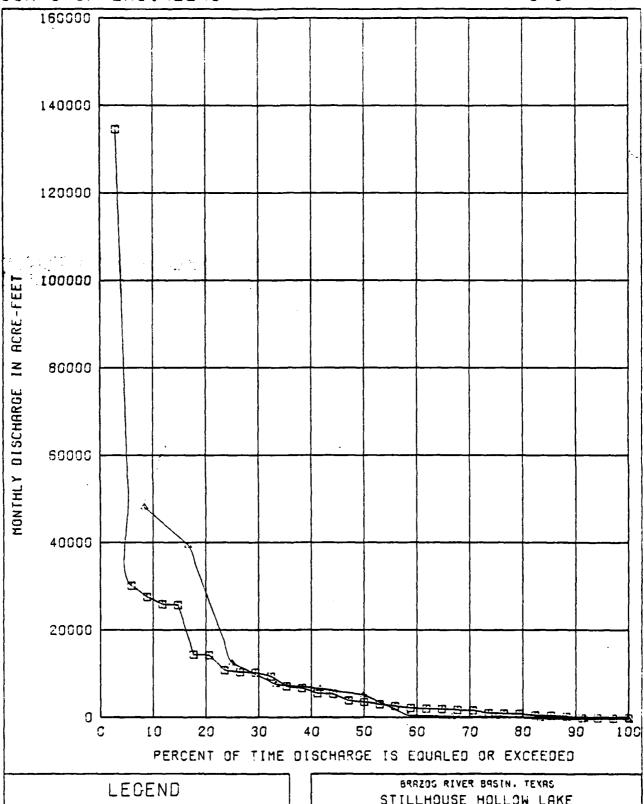
(PERIOD OF RECORD 1967-1979)



U.S. ARMY ENGINEER DISTRICT. FORT WORTH TO ACCOMPANY INSTREAM FLOW PROBLEMS AND NEEDS EVALUATION REPORT OF DECEMBER 1900 PLATE 17







2 PRE-IMPOUNDMENT CONDITIONS (PERIOD OF RECORD 1924-1957)

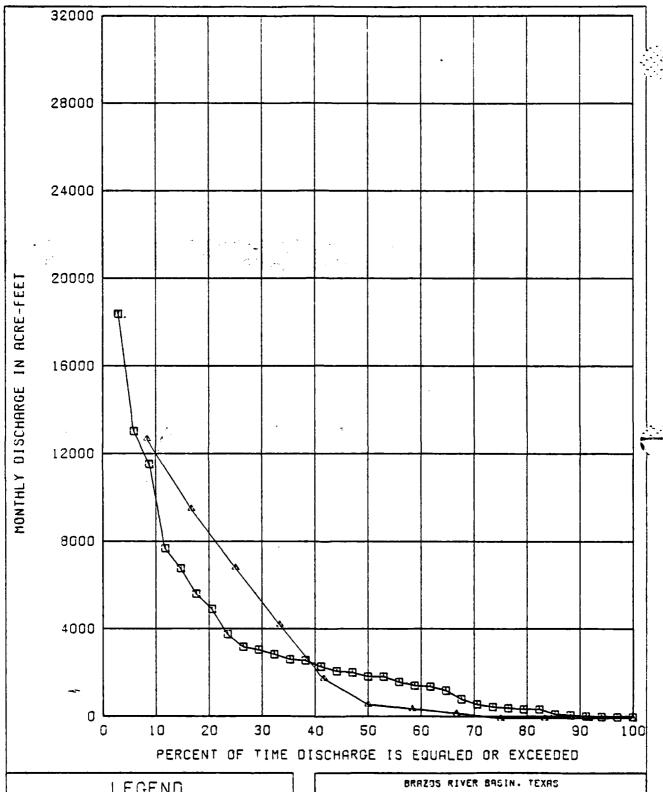
POST-IMPOUNDMENT CONDITIONS (PERIOD OF RECORD 1987-1979) STILLHOUSE HOLLOW LAKE

FLOW DURATION CURVES AT DAM SITE

JULY FLOWS

U.S. ARMY ENGINEER DISTRICT. FORT WORTH

PLATE 19



-E) PRE-IMPOUNDMENT CONDITIONS (PERIOD OF RECORD 1924-1957)

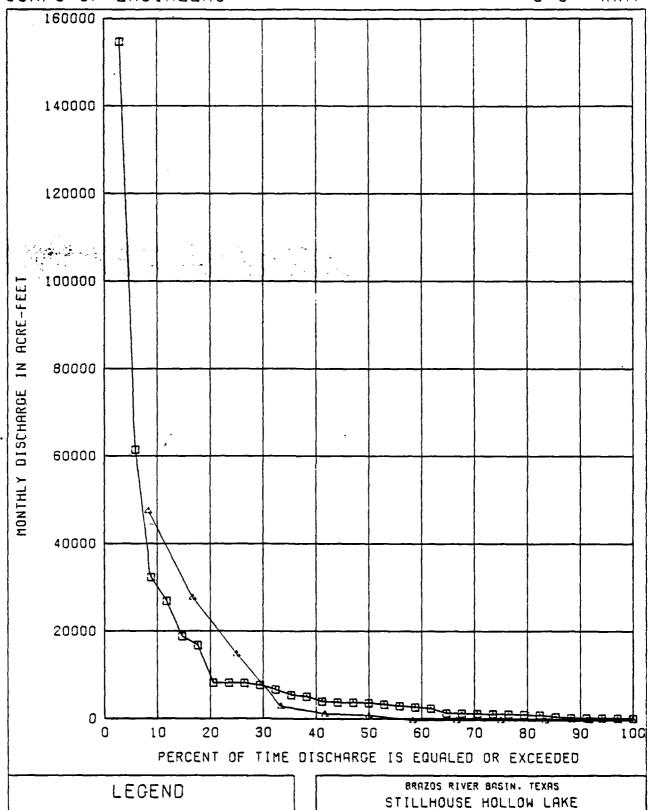
> POST-IMPOUNDMENT CONDITIONS (PERIOD OF RECORD 1997-1978)

STILLHOUSE HOLLOW LAKE

FLOW DURATION CURVES AT DAM SITE

RUGUST FLOWS

U.S. ARMY ENGINEER DISTRICT, FORT WORTH TO ACCOMPANY INSTREAM FLOW PROBLEMS AND NEEDS EVALUATION REPORT OF DECEMBER 1980 PLATE 20



PRE-IMPOUNDMENT CONDITIONS (PERIOD OF RECORD 1924-1957)

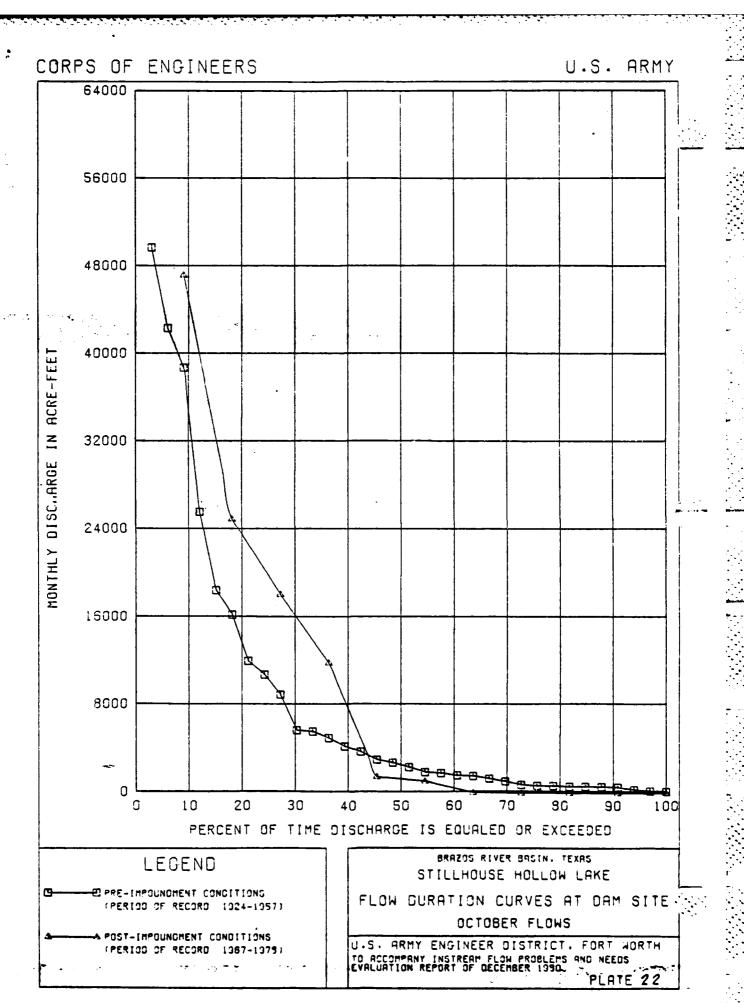
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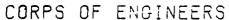
→ POST-IMPOUNCHENT CONCITIONS (PERIOD OF RECORD 1097-1079)

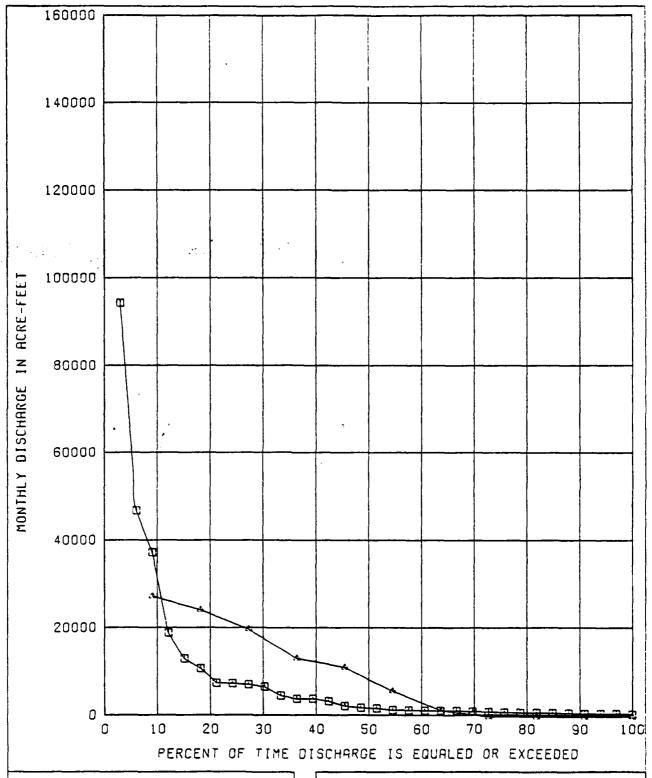
FLOW DURATION CURVES AT DAM SITE

SEPTEMBER FLOWS

U.S. SRMY ENGINEER DISTRICT. FORT WORTH TO ACCOMPANY INSTREAM FLOW PROBLEMS AND NEEDS EVALUATION REPORT OF DECEMBER 1980







LEGEND

PRE-IMPOUNDMENT CONDITIONS (PERIOD OF RECORD 1924-1957)

POST-IMPOUNDMENT CONDITIONS
(PERIOD OF RECORD 1967-1079)

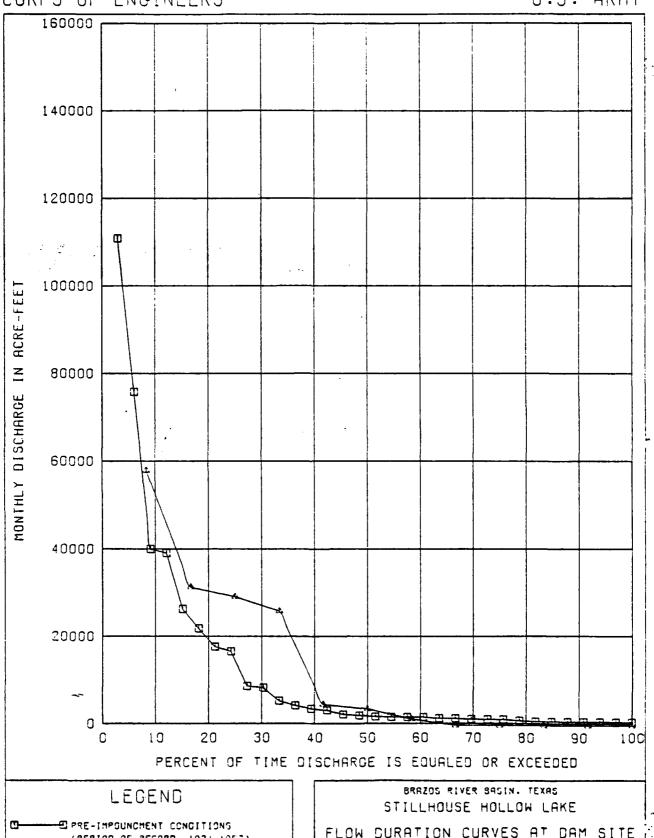
BRAZOS RIVER BASIN, TEXAS STILLHOUSE HOLLOW LAKE

FLOW DURATION CURVES AT DAM SITE

NOVEMBER FLOWS

U.S. ARMY ENGINEER DISTRICT. FORT WORTH TO ACCOMPANY INSTREAM FLOW PROBLEMS AND NEEDS EVALUATION REPORT OF DECEMBER 1980

PLATE 23



DEGEND

PRE-IMPOUNDMENT CONDITIONS

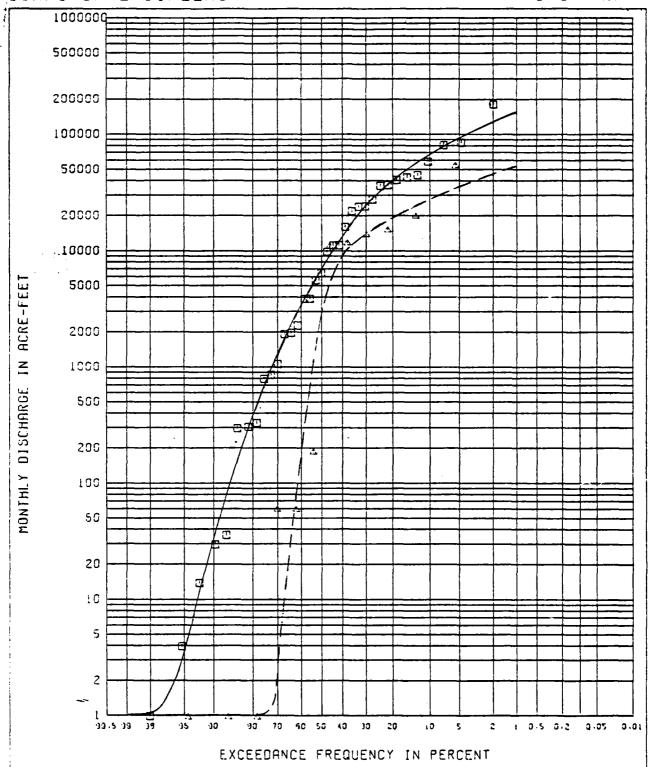
(PERIOD OF RECORD 1024-1057)

POST-IMPOUNDMENT CONDITIONS

(PERIOD OF RECORD 1097-1079)

FLOW DURATION CURVES AT DAM SITE DECEMBER FLOWS

U.S. ARMY ENGINEER DISTRICT. FORT HORTH
TO ACCOMPANY INSTREMT FLOW PROBLEMS AND NEEDS
EVALUATION REPORT OF DECEMBER 1990.
PLATE 24



PRE-IMPOUNDMENT CONDITIONS
(PERIOD OF RECORD 1924-1959)

— —: POST-IMPOUNDMENT CONDITIONS (PERIOD OF RECORD 1966-1979) BRAZOS RIVER BASIN. TEXAS

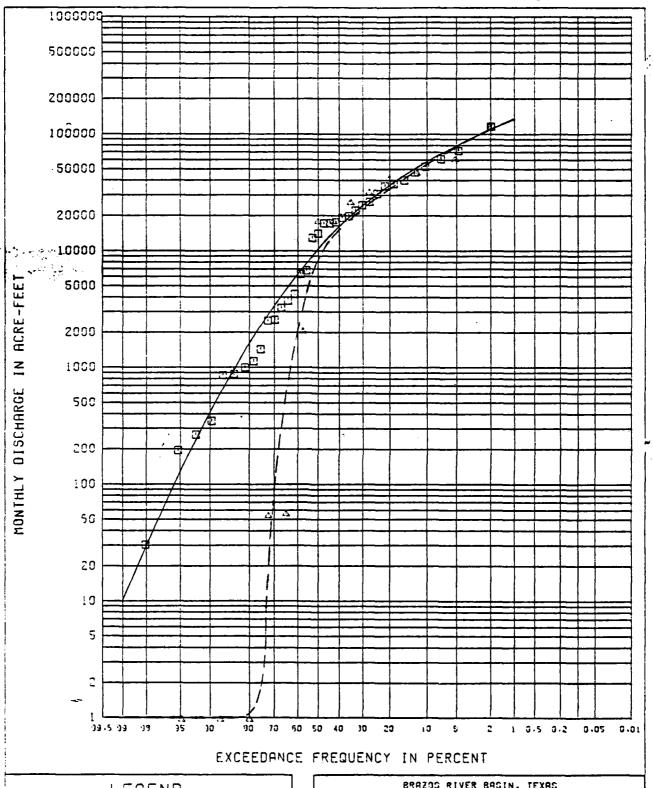
SOMERVILLE LAKE

DISCHARGE-FREQUENCY RELATIONS

AT DAM SITE

JANUARY FLOWS

U.S. ARMY ENGINEER DISTRICT. FORT WORTH TO ACCOMPANY INSTREAM FLOW PROBLEMS AND NEEDS EVALUATION REPORT OF DECEMBER 1980 PLATE F = 1



PRE-IMPOUNDMENT CONDITIONS
(PERIOD OF RECORD 1924-1959)

► - - POST-IMPOUNDMENT CONDITIONS

(PERIOD OF RECORD 1966-1979)

BRAZOG RIVER BAGIN. TEXAS

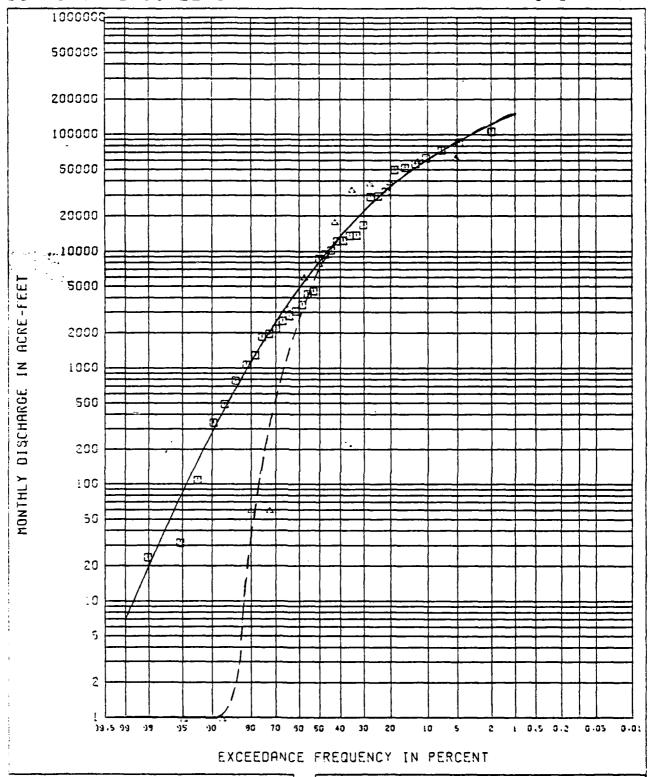
SOMERVILLE LAKE

DISCHARGE-FREQUENCY RELATIONS

AT DAM SITE

FEBRUARY FLOWS

U.S. ARMY ENGINEER DISTRICT. FORT WORTH TO ACCOMPANY INSTREAM FLOW PROBLEMS AND NEEDS EVALUATION REPORT OF DECEMBER 1980.

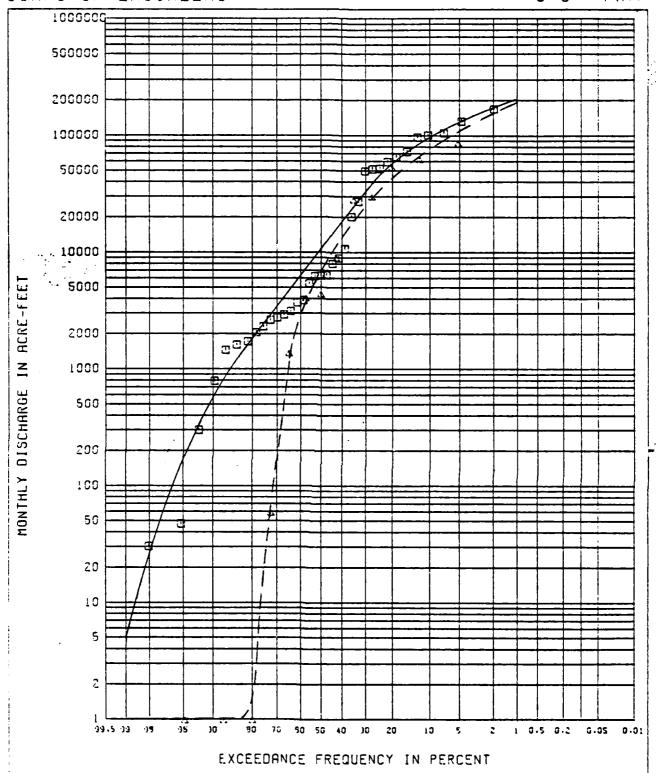


E PRE-IMPOUNDMENT CONDITIONS
(PERIOD OF RECORD 1924-1959)

- - A POST-IMPOUNDMENT CONDITIONS
(PERIOD OF RECORD 1956-1978)

BRRZOS RIVER BASIN. TEXAS
SOMERVILLE LAKE
DISCHARGE-FREQUENCY RELATIONS
AT DAM SITE
MARCH FLOWS

U.S. ARMY ENGINEER DISTRICT. FORT WORTH TO ACCOMPANY INSTREAM FLOW PROBLEMS AND NEEDS EVALUATION REPORT OF DECEMBER 1990



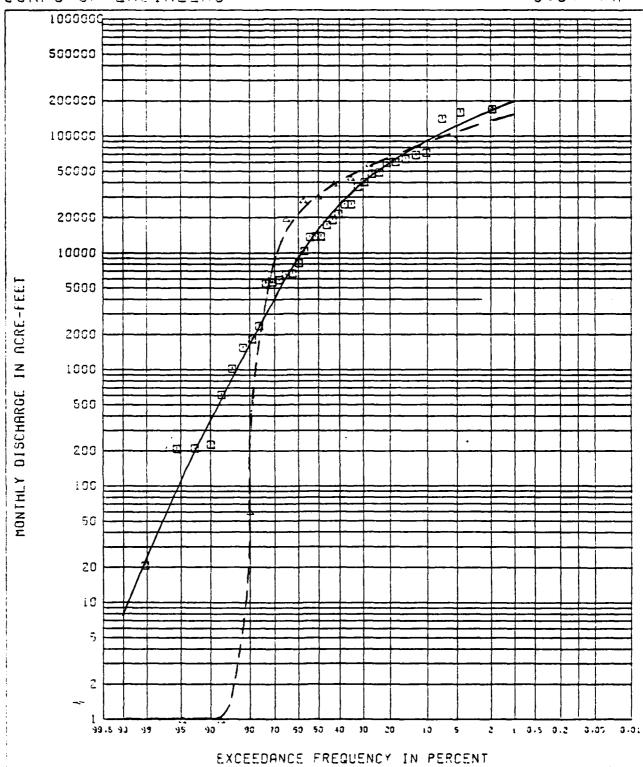
PRE-IMPOUNDMENT CONDITIONS
(PERIOD OF RECORD 1924-1959)

- -- POST-IMPOUNCHENT CONDITIONS (PERIOD OF RECORD 1988-1979)

BRRZOG RIVER BASIN. TEXAS
SOMERVILLE LAKE
DISCHARGE-FREQUENCY RELATIONS
AT DAM SITE
APRIL FLOWS

U.S. ARMY ENGINEER DISTRICT. FORT WORTH
TO ACCOMPANY INSTREAM FLOW PROBLEMS AND NEEDS
EVALUATION REPORT OF DECEMBER 1980

PLATE 4



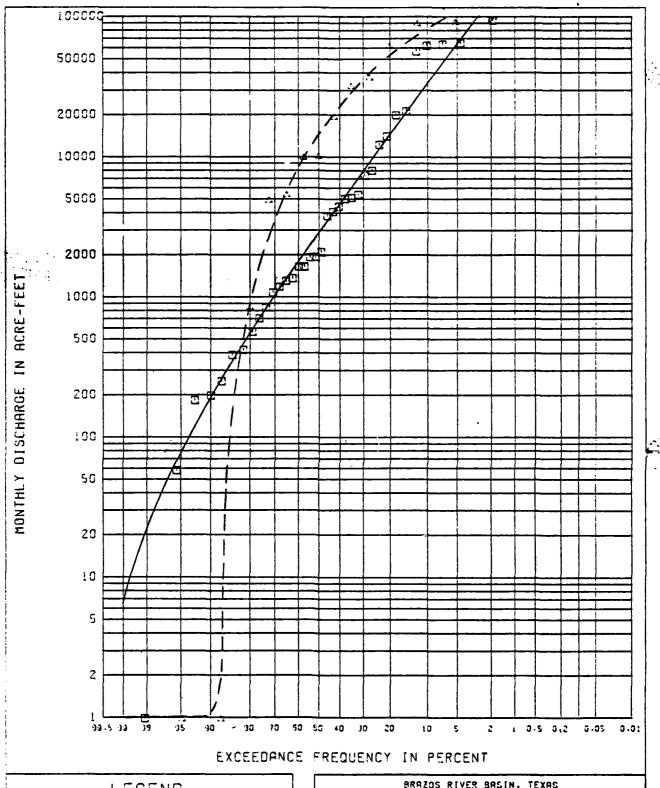
U- -- 2 PRE-IMPOUNDMENT CONDITIONS (PERIOD OF RECORD 1924-1959)

→ → POST-IMPOUNDMENT CONDITIONS

(PERIOD OF RECORD 1966-1979)

BRAZOS RIVER BASIN. TEXAS
SOMERVILLE LAKE
DISCHARGE-FREGUENCY RELATIONS
AT DAM SITE
MAY FLOWS

U.S. ARMY ENGINEER DISTRICT. FORT WORTH
TO ACCOMPANY INSTREAM FLOW PROBLEMS AND NEEDS
EVALUATION REPORT OF DECEMBER 1990
PLATE 5



PRE-IMPOUNDMENT CONDITIONS
(PERIOD OF RECORD (1924-1959)

-- -- POST-IMPOUNDMENT CONDITIONS
(PERIOD OF RECORD 1988-1979)

BRAZOS RIVER BASIN. TEXAS

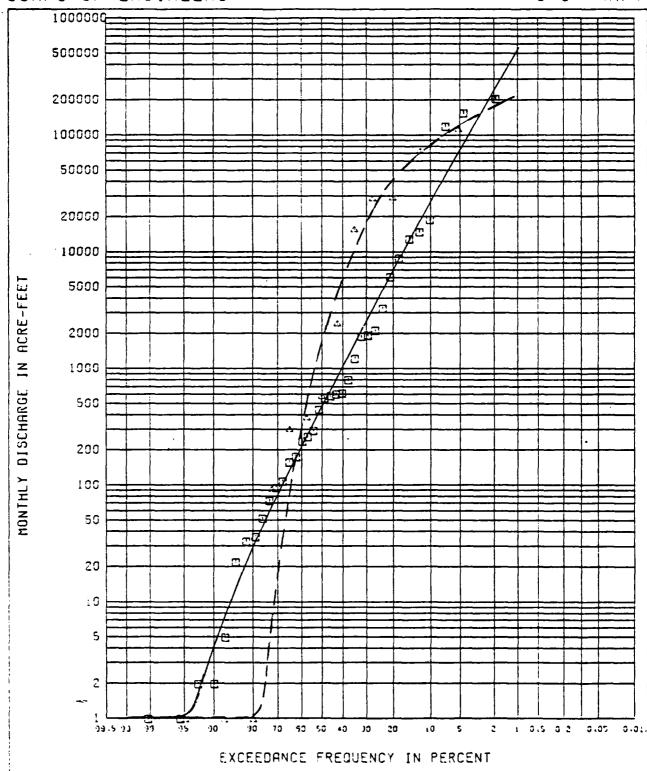
SOMERVILLE LAKE

DISCHARGE-FREQUENCY RELATIONS

AT DAM SITE

JUNE FLOWS

U.S. ARMY ENGINEER DISTRICT. FORT WORTH TO ACCOMPANY INSTREAM FLOW PROBLEMS AND NEEDS EVALUATION REPORT OF DECEMBER 1990 PLATE 6 12



☐—— ☐ PRE-IMPOUNCHENT CONDITIONS

(PERIOD OF RECORD 1924-1959)

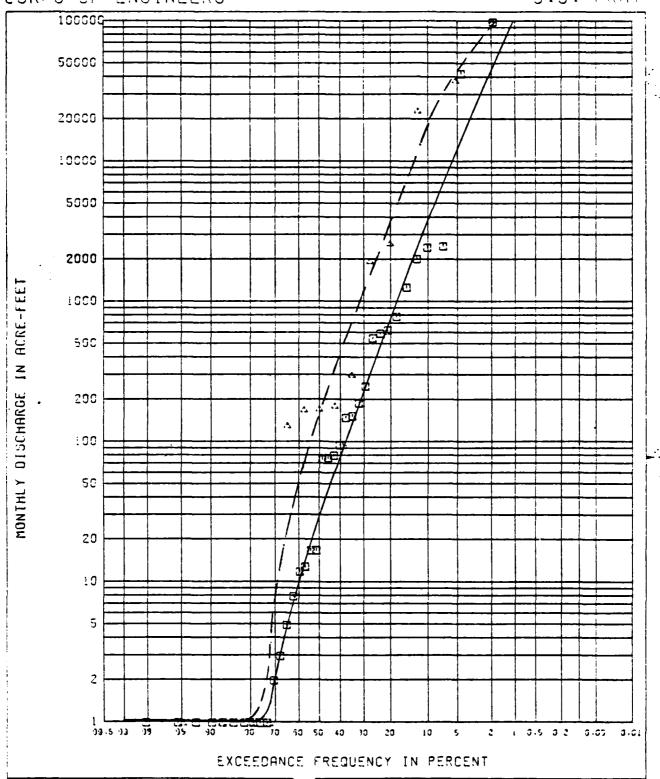
- - POST-IMPOUNCHENT CONDITIONS
(PERIOD OF RECORD 1986-1973)

BRRZOS RIVER BASIN. TEXAS SOMERVILLE LAKE

DISCHARGE-FREQUENCY RELATIONS AT DAM SITE

JULY FLOWS

U.S. ARMY ENGINEER DISTRICT, FORT WORTH TO ACCOMPANY INSTRESH FLOW PROBLEMS AND NEEDS EVALUATION REPORT OF DECEMBER 1980 "PLATE"7



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PRE-IMPOUNDMENT CONDITIONS
(PERIOD OF RECORD 1924-1959)

- - -- POST-IMPOUNDMENT CONDITIONS
(PERIOD OF RECORD 1966-1979)

BRAZOS RIVER BASIN. TEXAS

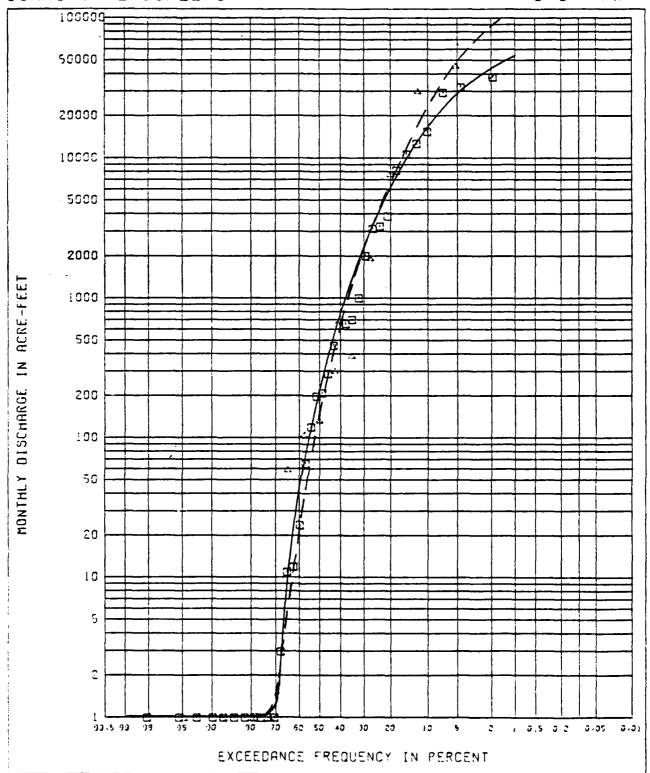
SOMERVILLE LAKE

DISCHARGE-FREQUENCY RELATIONS

AT DAM SITE

AUGUST FLOWS

U.S. ARMY ENGINEER DISTRICT, FORT WORTH
TO ACCOMPANY INSTREAM FLOW PROBLEMS AND NEEDS
EVALUATION REPORT OF DECEMBER 1990
PLATE 5



PRE-IMPOUNDMENT CONDITIONS
(PERIOD OF RECORD 1924-1953)

A- - A POST-IMPOUNDMENT CONDITIONS
(PERIOD OF RECORD 1986-1979)

BRRZOS RIVER BASIN. TEXAS

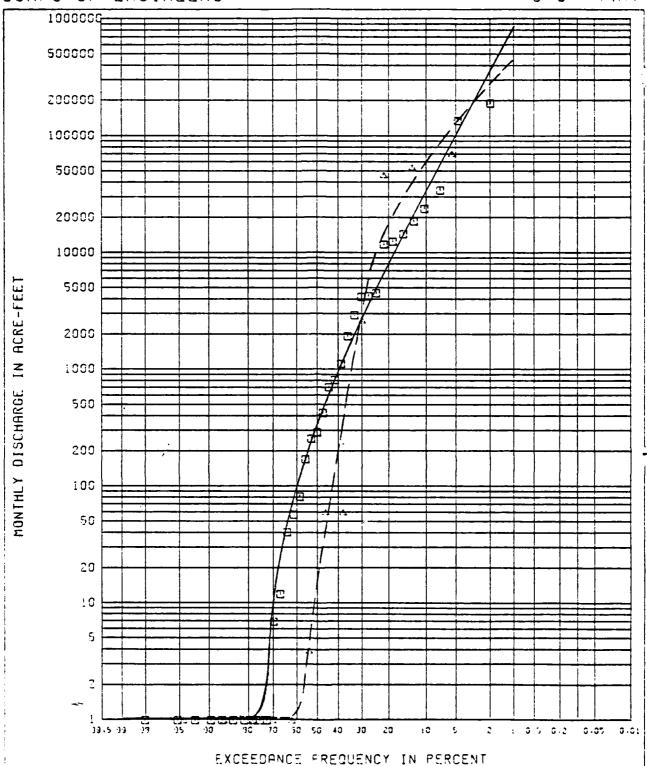
SOMERVILLE LAKE

DISCHARGE-FREQUENCY RELATIONS

AT DAM SITE

SEPTEMBER FLOWS

U.S. ARMY ENGINEER DISTRICT. FORT WORTH TO ACCOMPANY INSTREAM FLOW PROBLEMS AND NEEDS EVALUATION REPORT OF DECEMBER 1990 PLATE 9



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(PERIOD OF RECORD (1924-1959)

> - -> POST-IMPOUNDMENT CONDITIONS (PERIOD OF RECORD 1995-1979) BRRZOG RIVER SAGIN. TEXAS

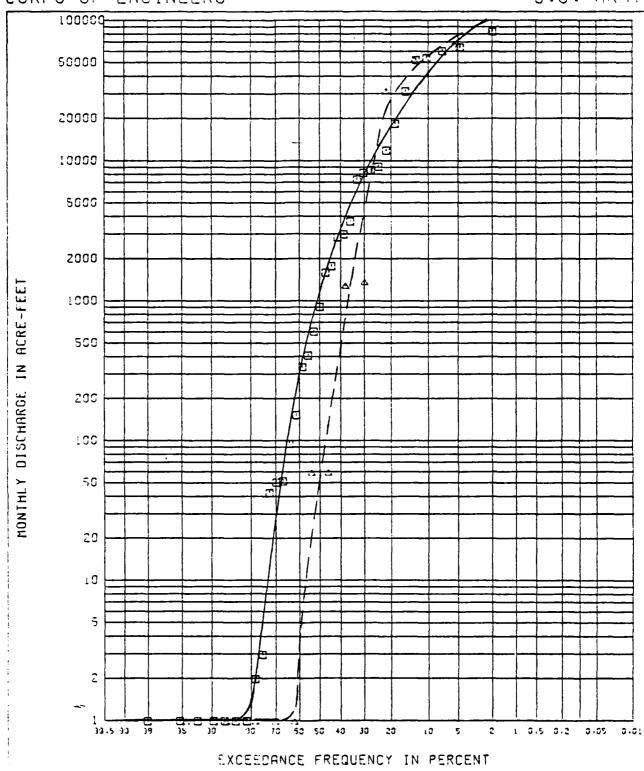
SOMERVILLE LAKE

DISCHARGE-FREQUENCY RELATIONS

AT DAM SITE

OCTOBER FLOWS

U.S. ARMY ENGINEER DISTRICT. FORT WORTH TO ACCOMPANY INSTREAM FLOW PROBLEMS AND NEEDS EVALUATION REPORT OF DECEMBER 1390 PLATE (O

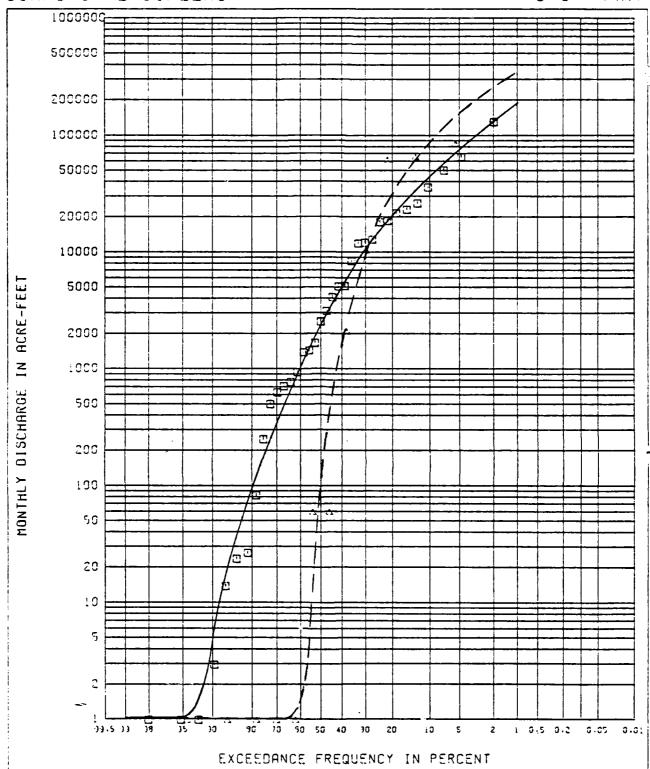


PRE-IMPOUNDMENT CONDITIONS
(PERIOD OF RECORD 1924-1959)

- - - POST-IMPOUNCHENT CONCITIONS
(PERIOD OF RECORD 1965-1979)

BRAZOS RIVER BASIN, TEXAS
SOMERVILLE LAKE
DISCHARGE-FREQUENCY RELATIONS
AT DAM SITE
NOVEMBER FLOWS

U.S. ARMY ENGINEER DISTRICT, FORT WORTH TO ACCOMPANY INSTREAM FLOH PROBLEMS AND NEEDS EVALUATION REPORT OF DECEMBER 1990 PLATE 11



PRE-IMPOUNDMENT CONDITIONS
(PERIOD OF RECORD 1924-1959)

► --> POST-IMPOUNDMENT CONDITIONS
(PERIOD OF RECORD 1966-1979)

BRAZOS RIVER BASIN. TEXAS

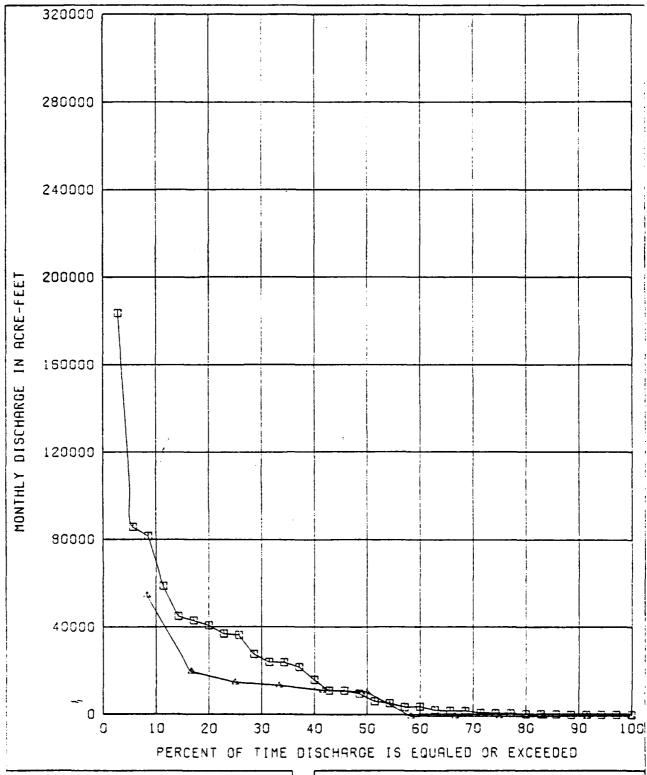
SOMERVILLE LAKE

DISCHARGE-FREQUENCY RELATIONS

AT DAM SITE

DECEMBER FLOWS

U.S. ARMY ENGINEER DISTRICT. FORT WORTH TO ACCOMPANY INSTREAM FLOW PROBLEMS AND NEEDS EVALUATION REPORT OF DECEMBER 1990



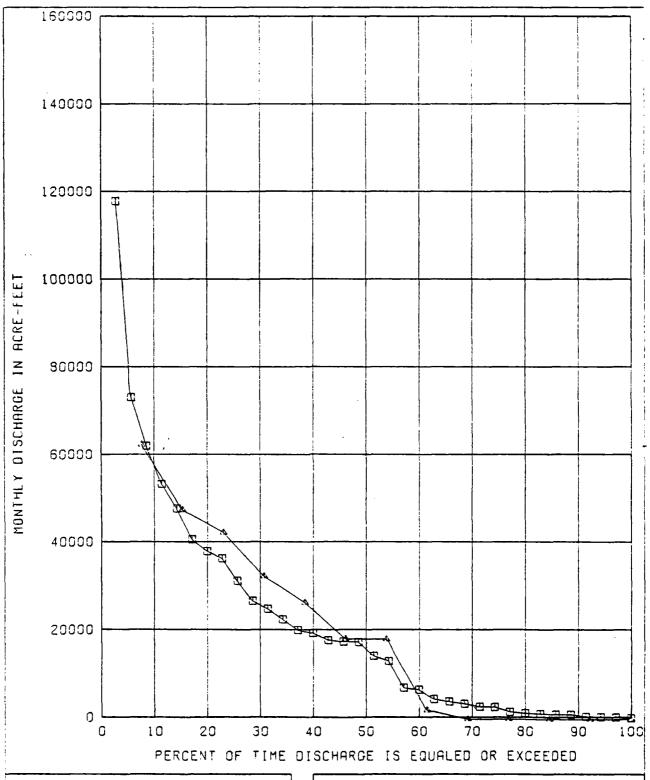
PRE-IMPOUNDMENT CONDITIONS
(PERIOD OF RECORD 1924-1953)

POST-IMPOUNDMENT CONDITIONS
(PERIOD OF RECORD 1999-1979)

BRAZOS RIVER BASIN. TEXAS SOMERVILLE LAKE

FLOW DURATION CURVES AT DAM SITE JANUARY FLOWS

U.S. ARMY ENGINEER DISTRICT, FORT WORTH
TO ACCOMPANY INSTREAM FLOW PROBLEMS AND NEEDS
EVALUATION REPORT OF DECEMBER 1980
PLATE 13



PRE-IMPOUNDMENT CONDITIONS

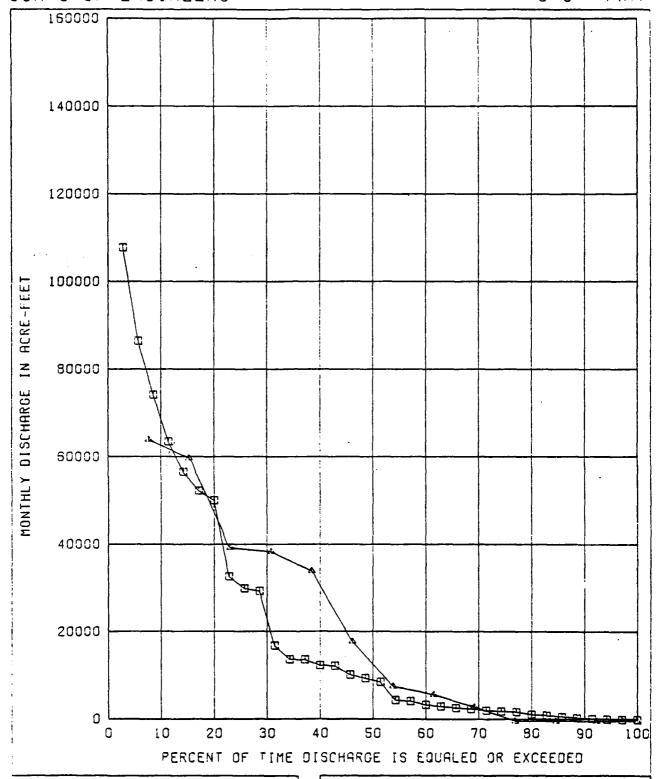
(PERIOD OF RECORD 1924-1959)

A POST-IMPOUNDMENT CONDITIONS
(PERIOD OF RECORD 1966-1979)

BRAZOS RIVER BASIN. TEXAS SOMERVILLE LAKE

FLOW DURATION CURVES AT DAM SITE FEBRUARY FLOWS

U.S. ARMY ENGINEER DISTRICT, FORT WORTH
TO ACCOMPANY INSTREAM FLOW PROBLEMS AND NEEDS
EVALUATION REPORT OF DECEMBER 1990
PLATE 14



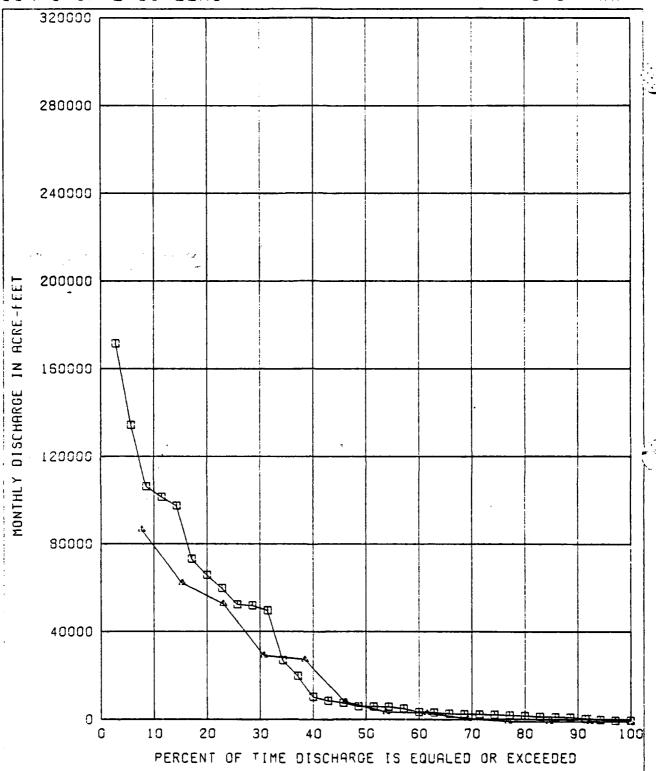
THE PRE-IMPOUNDMENT CONDITIONS (PERIOD OF RECORD 1924-1953)

POST-IMPOUNDMENT CONDITIONS (PERIOD OF RECORD 1955-1979)

BRAZOS RIVER BASIN. TEXAS SOMERVILLE LAKE

FLOW DURATION CURVES AT DAM SITE MARCH FLOWS

U.S. ARMY ENGINEER DISTRICT. FORT WORTH
TO ACC THANY INSTREAM FLOW PROBLETS AND NEEDS
EVALUATION REPORT OF DECEMBER 1990
PLATE 15



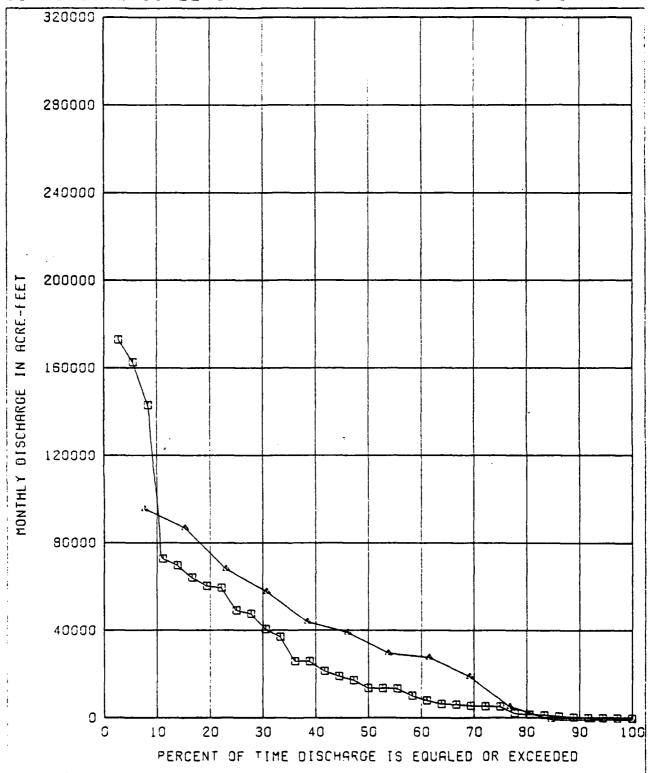
PRE-IMPOUNDMENT CONDITIONS
(PERIOD OF RECORD 1924-1959)

POST-IMPOUNDMENT CONDITIONS
(PERIOD OF RECORD 1985-1978)

BRAZOS RIVER BASIN. TEXAS SOMERVILLE LAKE

FLOW DURATION CURVES AT DAM SITE APRIL FLOWS

U.S. ARMY ENGINEER DISTRICT. FORT WORTH TO ACCOMPANY INSTREAM FLOW PROBLEMS AND NEEDS EVALUATION REPORT OF DECEMBER 1980





PRE-IMPOUNDMENT CONDITIONS
(PERIOD OF RECORD 1924-1953)

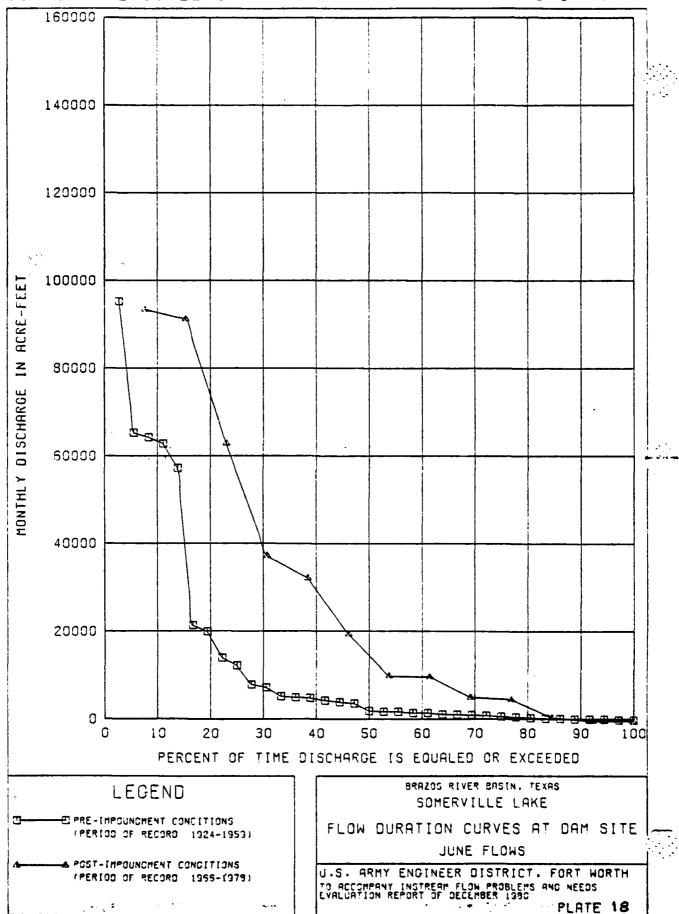
POST-IMPOUNDMENT CONDITIONS
(PERIOD OF RECORD 1956-1979)

BRAZOS RIVER BASIN. TEXAS
SOMERVILLE LAKE

FLOW DURATION CURVES AT DAM SITE MAY FLOWS

U.S. ARMY ENGINEER DISTRICT. FORT WORTH TO ACCOMPANY INSTREAM FLOW PROBLEMS AND NEEDS EVALUATION REPORT OF DECEMBER 1980

PLATE 17



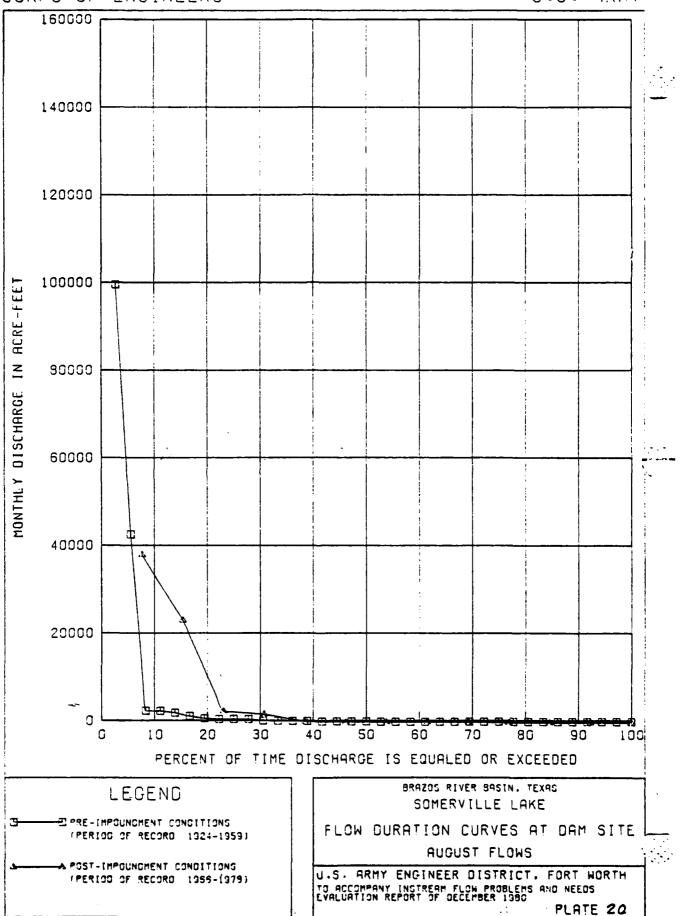
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(PERIOD OF RECORD 1924-1959)

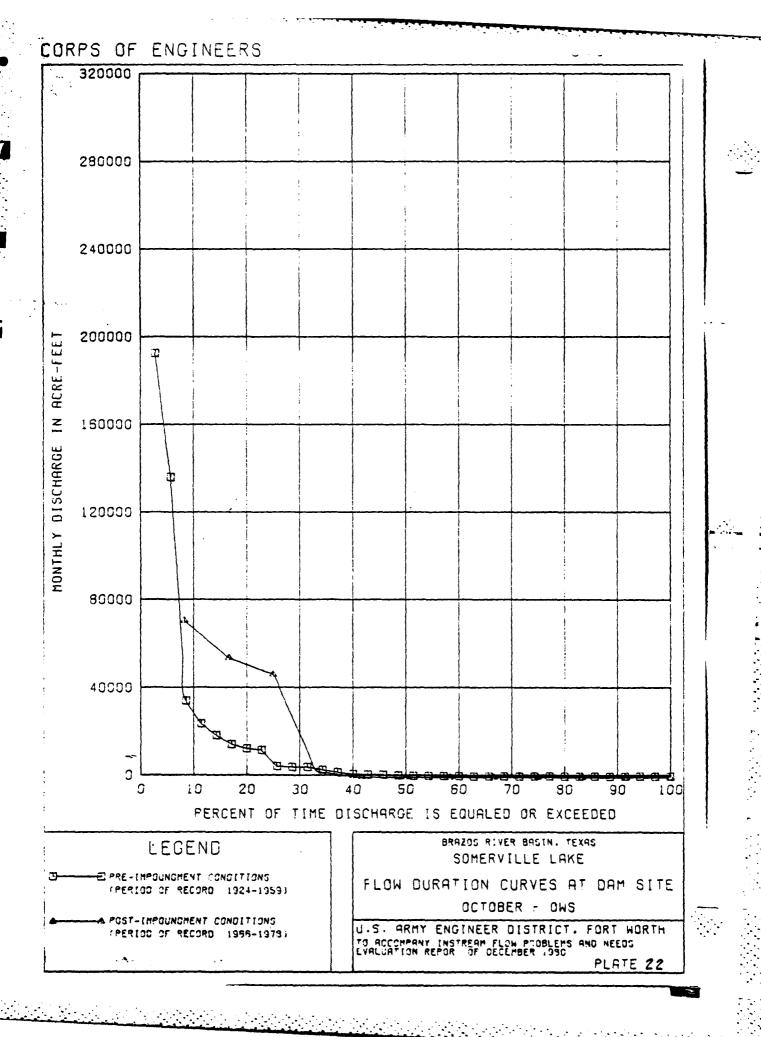
POST-(HPOUNDMENT CONDITIONS (PERIOD OF RECORD 1956-1979)

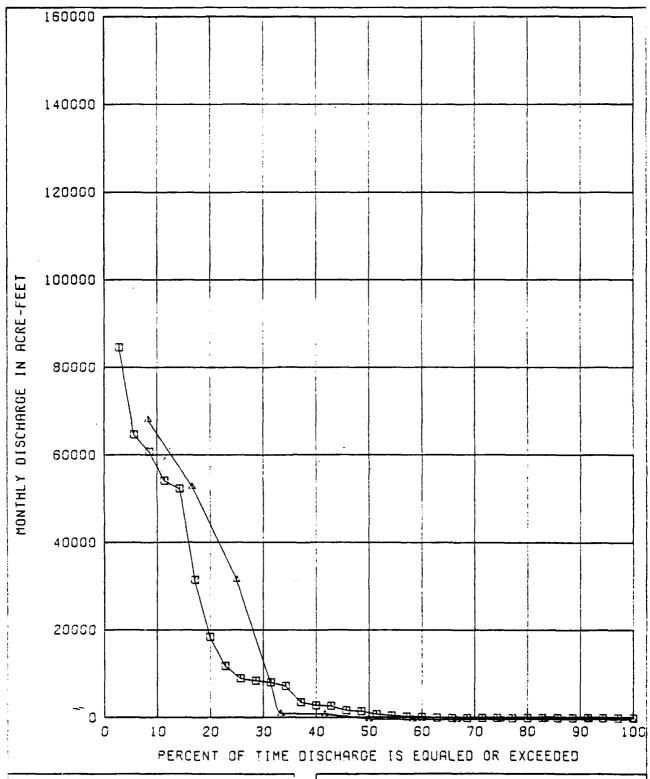
BRAZOS RIVER BASIN. TEXAS SOMERVILLE LAKE

FLOW DURATION CURVES AT DAM SITE JULY FLOWS

U.S. ARMY ENGINEER DISTRICT. FORT HORTH
TO ACCOMPANY INSTREAM FLOW PROBLEMS AND NEEDS
EVALUATION REPORT OF DECEMBER 1980
PLATE 19







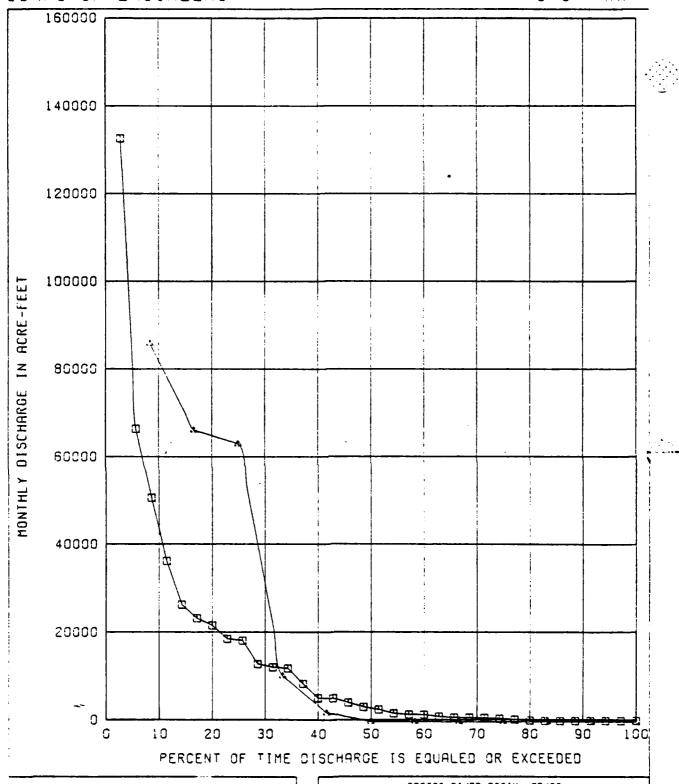
PRE-(HPOUNCHENT CONDITIONS (PERIOD OF RECORD 1924-1953)

POST-IMPOUNDMENT CONDITIONS
(PERIOD OF RECORD 1966-1978)

BRAZOS RIVER BASIN, TEXAS SOMERVILL LAKE

FLOW DURATION CURVES AT DAM SITE NOVEMBER FLOWS

U.S. ARMY ENGINEER DISTRICT. FORT WORTH
TO ACCOMPANY INSTREAM FLOW PROBLEMS AND NEEDS
EVALUATION REPORT OF DECEMBER 1980
PLATE 25



PRE-IMPOUNDMENT CONDITIONS

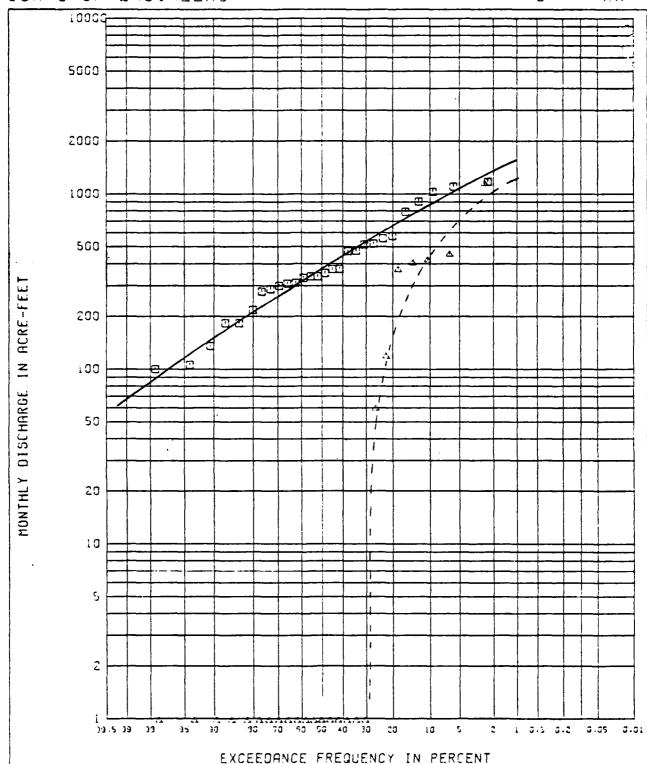
(PERIOD OF RECORD 1924-1959)

POST-IMPOUNDMENT CONDITIONS (PERIOD OF RECORD 1955-1979)

BRAZOS RIVER BASIN. TEXAS SOMERVILLE LAKE

FLOW DURATION CURVES AT DAM SITE DECEMBER FLOWS

U.S. ARMY ENGINEER DISTRICT. FORT WORTH
TO ACCOMPANY INSTREAM FLCH PROBLEMS AND NEEDS
EVALUATION REPORT OF DECEMBER 1990
PLATE 24



PRE-IMPOUNDMENT CONDITIONS
(PERIOD OF RECORD 1924-1952)

- - A POST-IMPOUNDMENT C'NOITIONS (PERIOD OF RECORD 1952-1979)

O DRADD RIVER SASIN. TEXAS

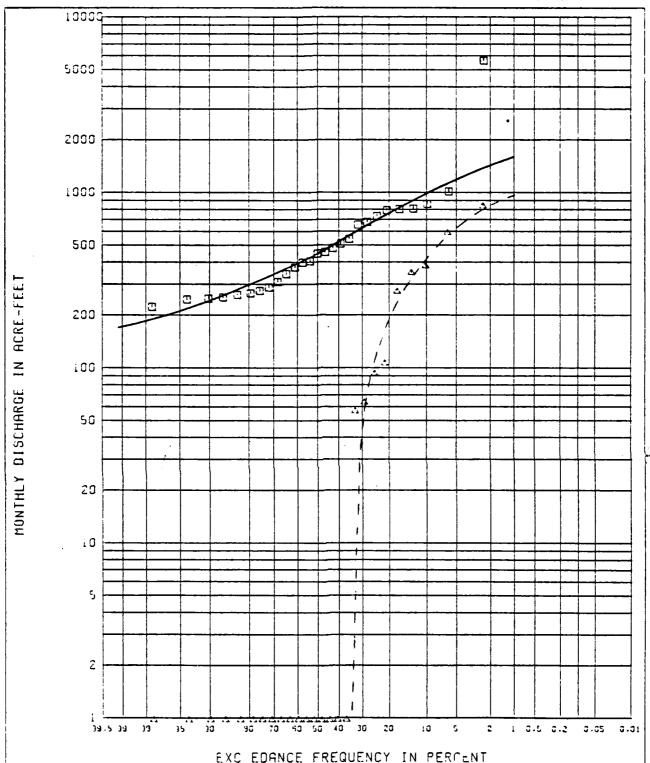
O.C. FISHER LAKE

DISCHARGE-FREQUENCY RELATIONS

AT AM SITE

JANUARY FLOWS

U.S. ARMY ENGINEER DISTRICT. FORT WORTH
TO ACCOMPANY INSTREAM FLOW PROBLEMS AND MEEDS
EVALUATION REPORT DECEM ER 390
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- - - POST-IMPOUNDMENT CONDITIONS
(PERIOD OF 9 CORD 1952-1 79)

COLCRADO RIVER BASIN TEXAS

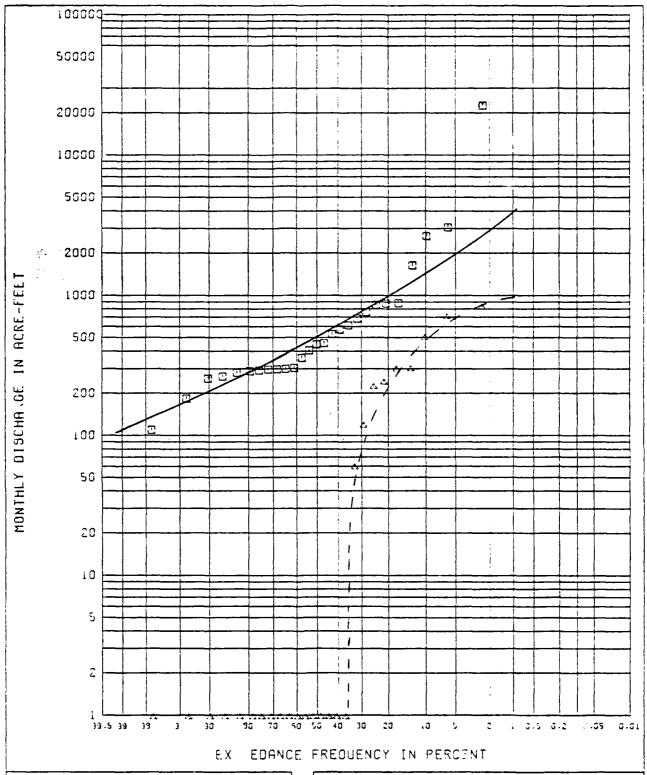
O.C. SHER LAKE

DISCHARCE-FREQUENCY RELATIONS

AT DAM SITE

FEB UARY FLOWS

U. . ARMY ENGINEER DISTRICT. FORT WORTH
TO ACCOMPANY INSTREAM FLOW PROBLEMS AND NEEDS
EVALUATION REPORT O DECLM ER 1390
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PRE-IMPOUNDMENT CONDITIONS (PERIOD OF REC RO 1 24-1352)

 CLORAD RIVER BASIN, TEXAS

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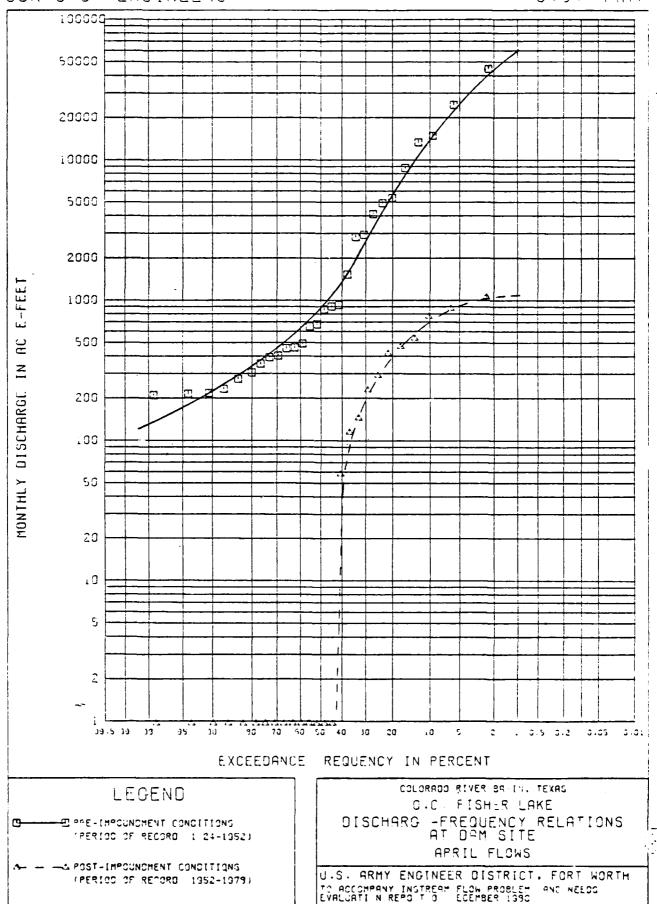
DISCHARGE-FRED NCY RELATIONS

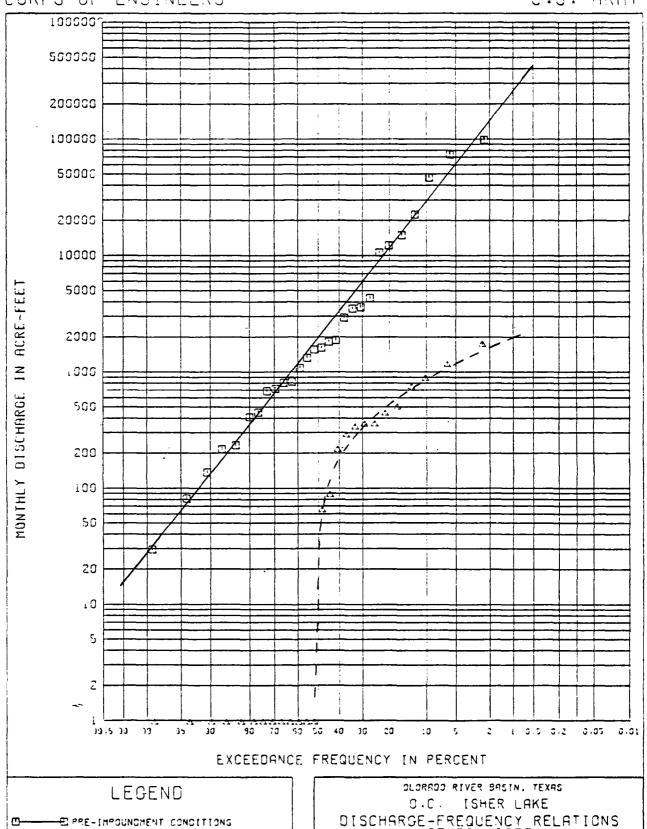
AT DAM SITE

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U. ARMY ENGINEER DISTRIC . RT WORTH TO ACCOMPANY INSTRUME LO PROBLEMS AND NEEDS EVALUATION REPORT FORCEBER 90 PLATE 3

PLATE 4

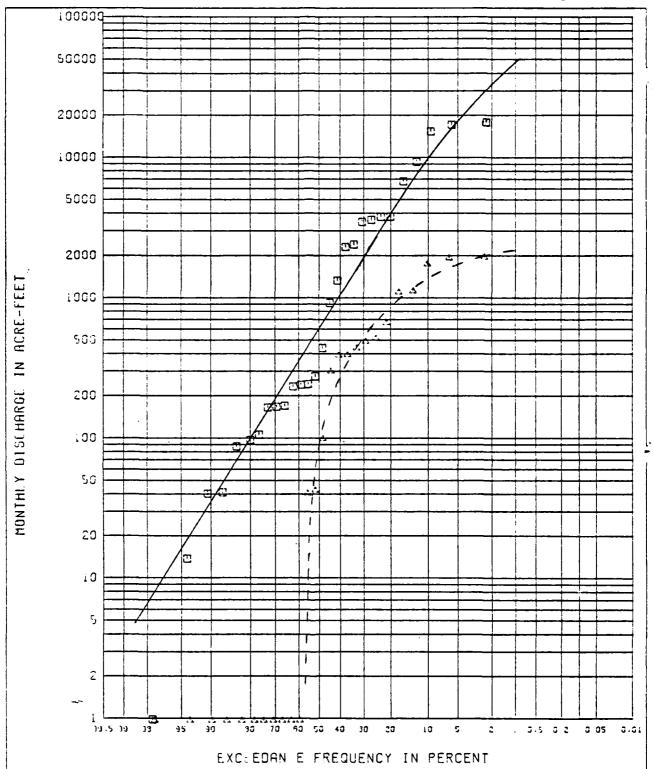




IPERIOD OF RECORD 1-2 -195

- - POST-IMPOUNDMENT NOITIONS (PERI D OF RECORD 1952-1979) DISCHARGE-FREQUENCY RELATIONS AT DAM SITE MAY FLOWS

U. . ARMY ENGINEER DISTRICT. FORT WORTH TO ACCOMPANY INSTREAM LOW PROBLEMS NO NEEDS EVALUATION REPORT 3 EC 6ER 1990 PLATE 5



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TPERIOD OF REURRO 132:-1352)

- - - POST-IMPOUNDMENT CONDITIONS
(PERIOD OF RECORD 1952-1979)

COLORROO RIVER ASIN. TEXAS .

O.C. FISHER LAKE

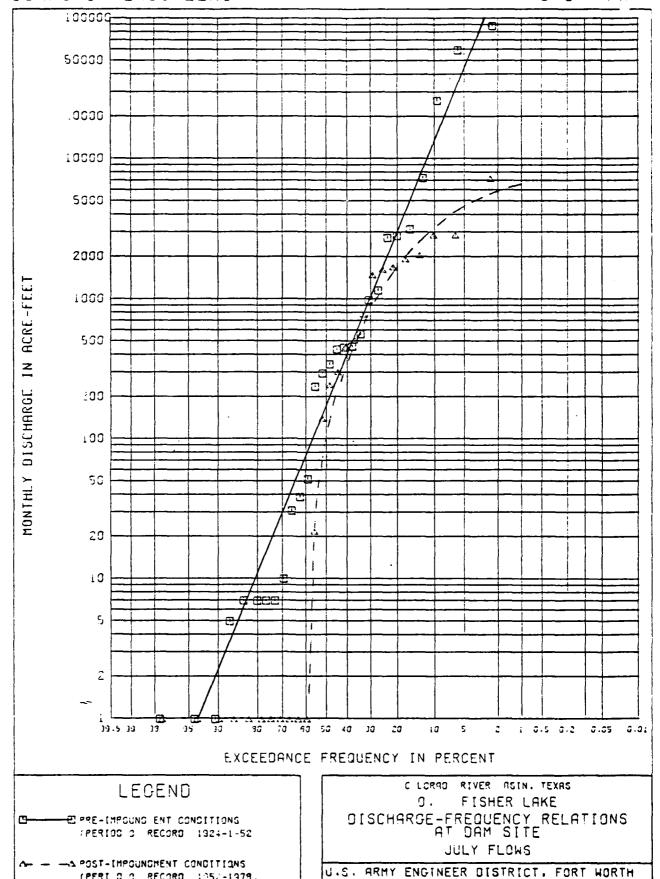
DISCHARGE-FREQUENCY RELATIONS

AT DAM SITE

JUNE FLOWS

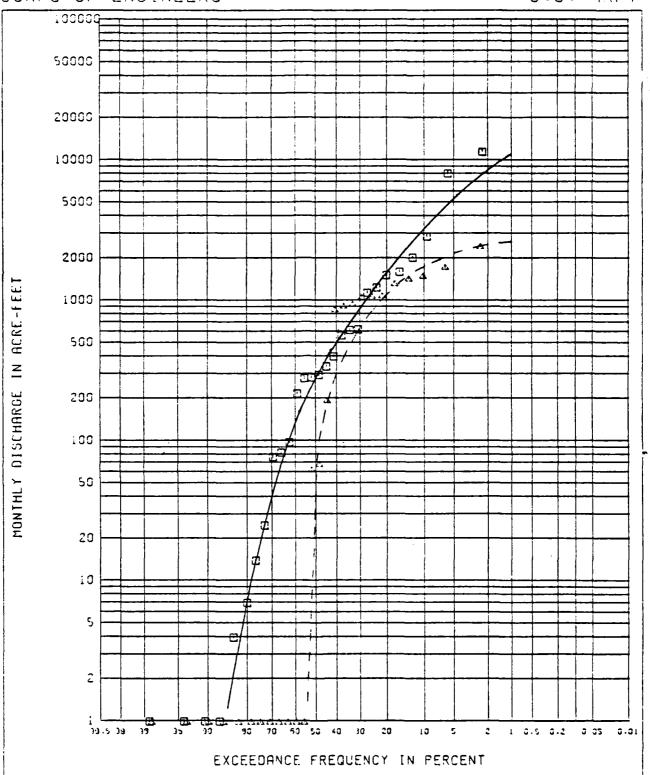
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TO ACCOMPANY INSTPEAM FLOW PROBLEMS AND NEEDS
EVALUATION REPORT OF DECEMBER 1980
PLATE 6

(PERI 0 0 RECORD 1952-1979)



TO ACCOMPANY INSTREAM FLO PROBLEM AND NELDS EVALUATION REPORT FORC M ER 1-30

PLATE 7



PRE-IMPOUNDMENT CONDITIONS (PERIOD OF RECORD 1924~1952)

- - - POST-IMPOUNDMENT C NOITIONS (PERIOD RECORD 1952-1979)

COLORADO RIVER BASIN. TEXAS

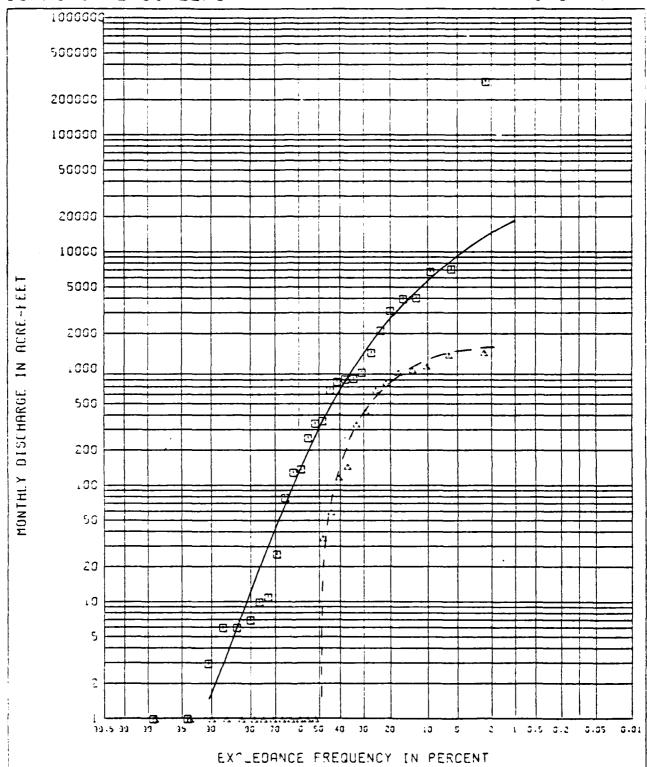
O.C. FISHER LAKE

DISCHARG -- FREQUENCY RELATIONS

AT DAM SITE

AUGUST FLOWS

U.S. ARMY ENGINEER DISTRICT. FORT WORTH TO ACCOMPANY INSTREAM FLOW PROBLEMS AND WEEDS EVALUATION REPORT OF DECEMBER 1 30



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☐---- ☐ PRE-[HPOUNCHENT CONDITIONS (PERISO OF RE ORO 192 -1752)

→ → POST-IMPOUNDMENT DNDITIONS

(PERIOD OF RECORD 195 -1 9)

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OLDRAD RIVER ASIN. TEXAS

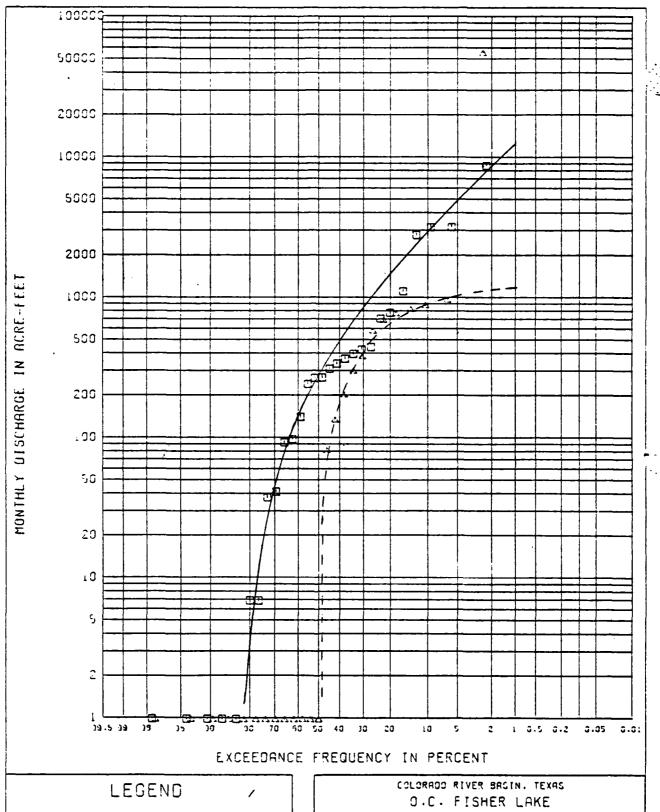
O.C. FISHER LAKE

DISCHARGE-FREQUENCY RELATIONS

AT DAM SITE

SEPTEMBER FLOWS

U.S. ARMY ENGINEER DISTRICT. FORT WORTH
TO ACCOMPANY INSTREAM FLOH PROBLEMS AND NEEDS
EVALUATION REPORT OF DECEMBER 380
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PRE-IMPOUNDMENT CONDITIONS
(PERIOD OF RECORD 1724-1952)

A- - POST-IMPOUNDMENT CONDITIONS
(PERIOD OF RECORD 195 -1979)

COLORADO RIVER BASIN. TEXAS

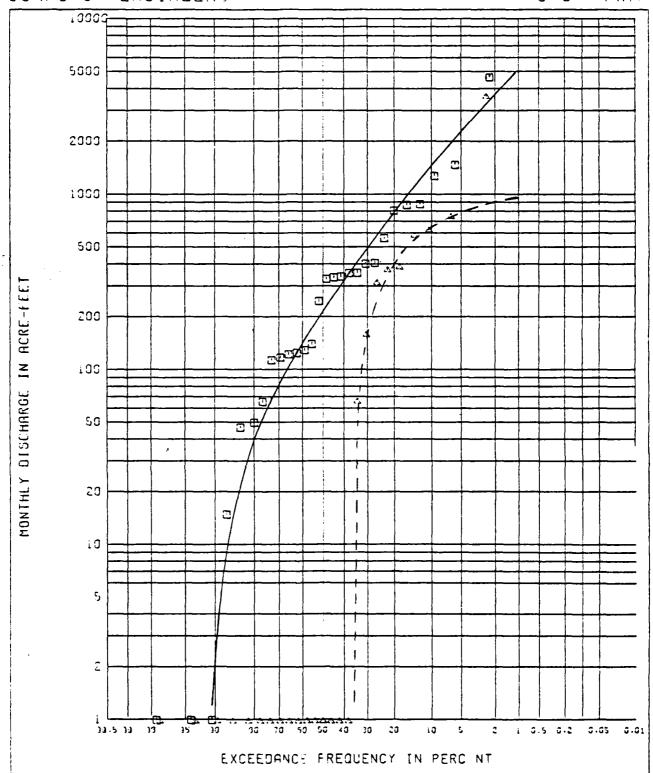
O.C. FISHER LAKE

DISCHARGE-FREQUENCY RELATIONS

AT DAM SITE

OCTOBER LOWS

U.S. ARMY ENGINEER DISTRICT. FORT WORTH
TO ACCOMPANY INSTREAM LOW PROBLEMS AND NEEDS
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PRE-IMPOUNDMENT CONDITIONS

(PRIOD FRECORD 192 -1952)

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COLORROD RIVER BASIN. TEXAS

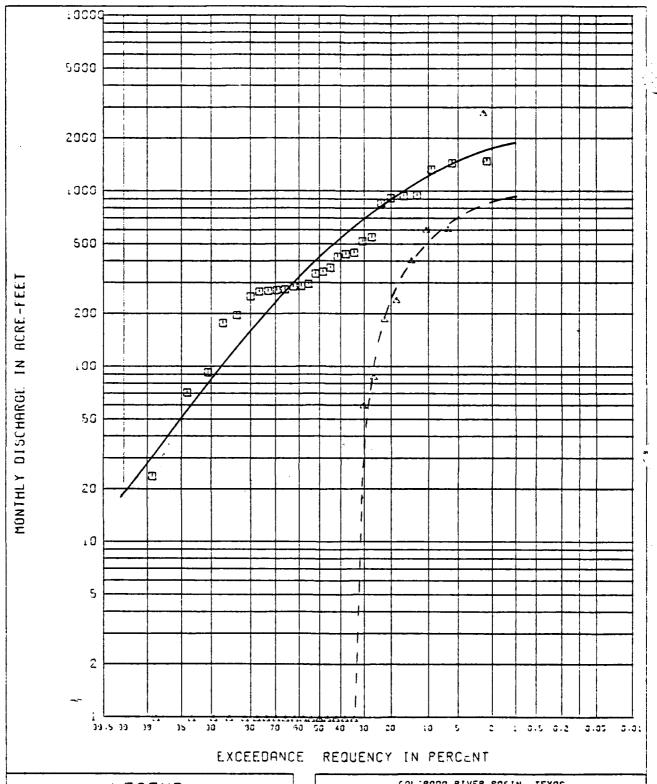
O.C. FISHER LAKE

DISCHARGE-FREQUENCY RELATIONS

AT DAM SITE

NOVEMBER FLOWS

U.S. ARMY ENGINEER DISTRICT. FORT WORTH
TO A COMPANY INSTREAM FLO PROBLEMS AND NEEDS
EVALUATION REPORT OF DECEMBER 1990
PLATE 11



☐ ☐ PRE-IMPOUNDMENT CONDITIONS

(PERIOD OF RECORD 1024-1052)

- - A POST-IMPOUNDMENT ONCITIONS

(PERIOD OF PECORD 1952-1979)

COLORADO RIVER SASIN. TEXAS

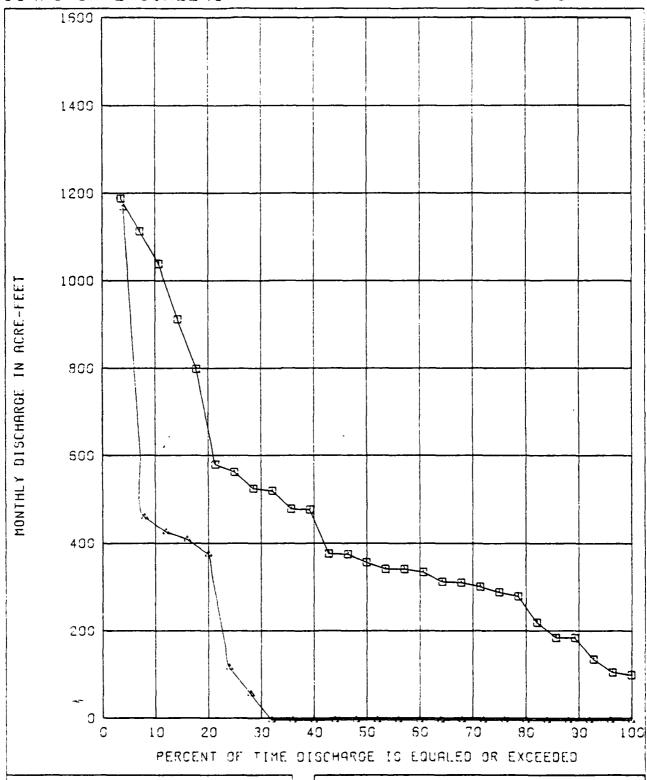
O.C. FISHER LAKE

DISCHAR TE-FREQUENCY RELATIONS

AT DAM SITE

DECEMBER FLOWS

U. . RMY ENGINEER DISTRICT. FORT WORTH
TO ACCOMPANY INSTREAM FLOH PROBLEMS AND NEEDS
EVALUATION REPORT OF SECENCER 1990
PLATE 12



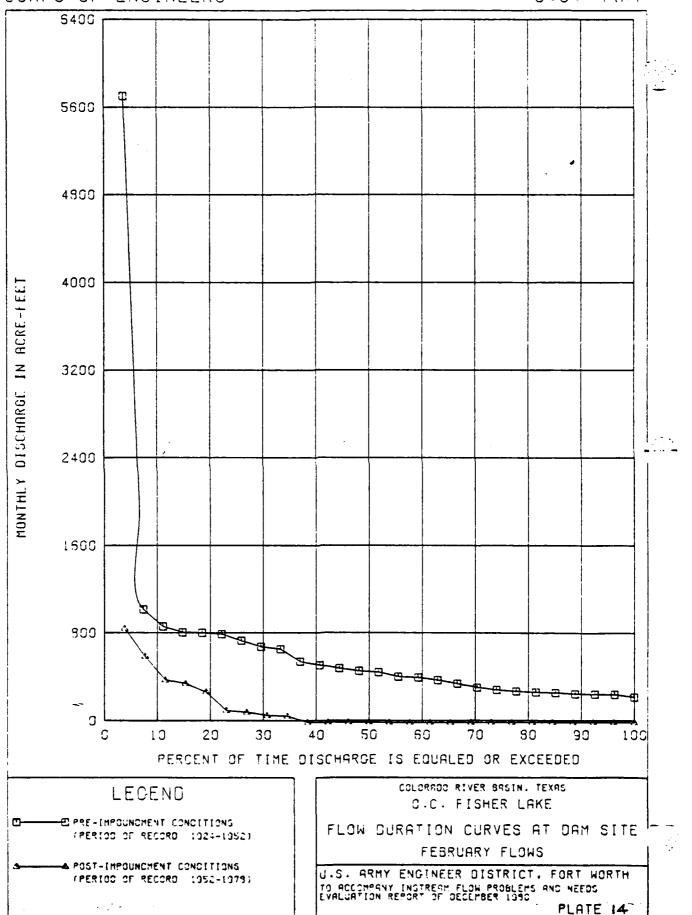
POST-IMPOUNDMENT CONDITIONS (PERIOD OF RECORD (1952-1979)

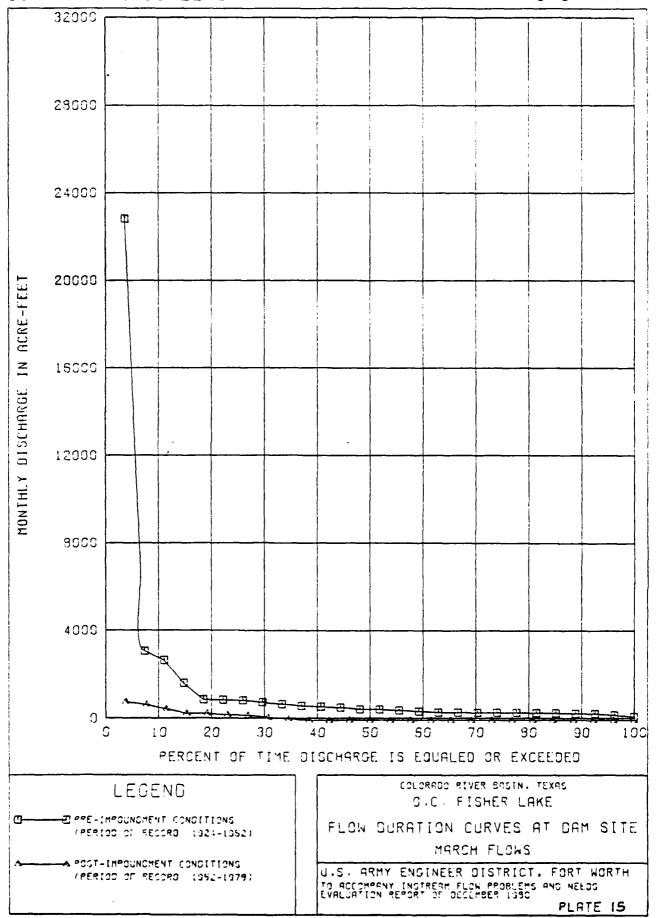
COLORADO RIVER BASIN, TEXAS

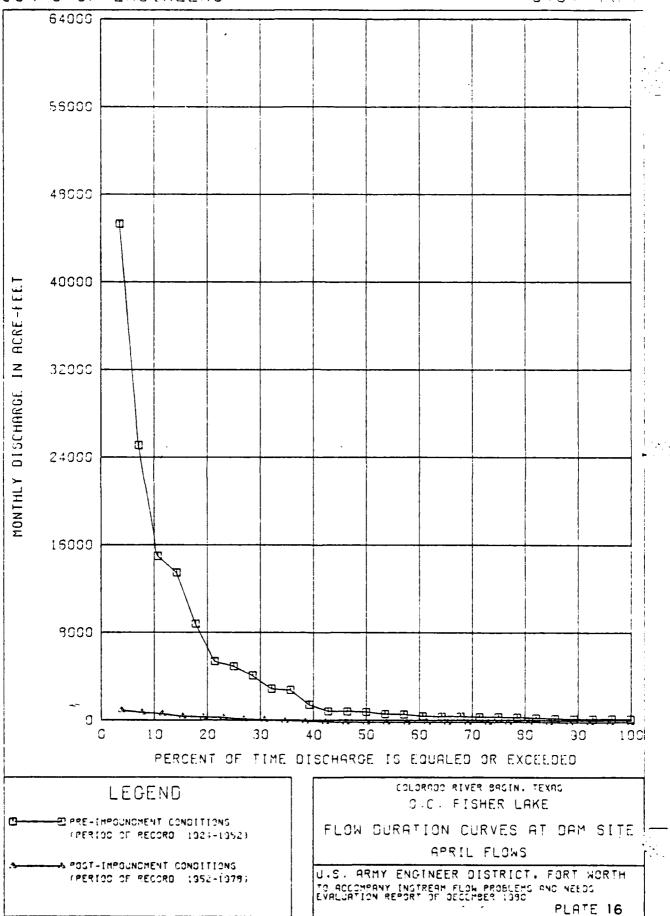
O.C. FISHER LAKE

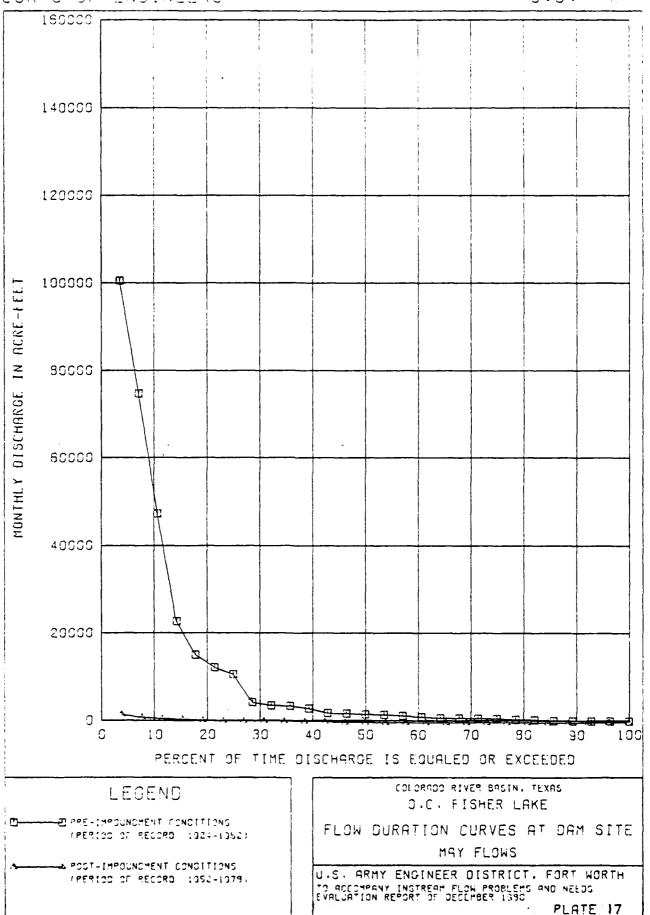
FLOW DURATION CURVES AT DAM SITE JANUARY FLOWS

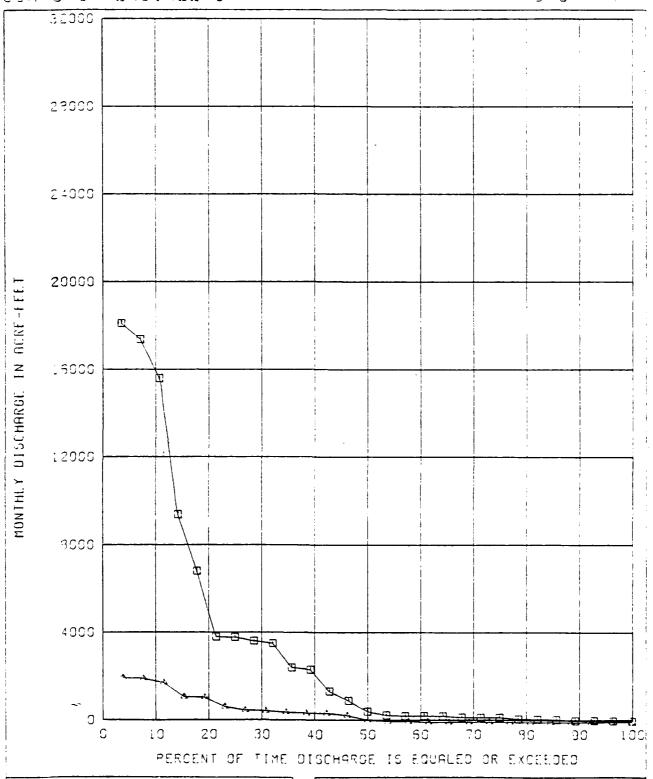
U.S. ARMY ENGINEER DISTRICT. FORT WORTH
TO ACCOMPANY INSTREAM FLOW PROBLEMS AND NEEDS
EVALUATION REPORT OF DECEMBER 1980
PLATE 13











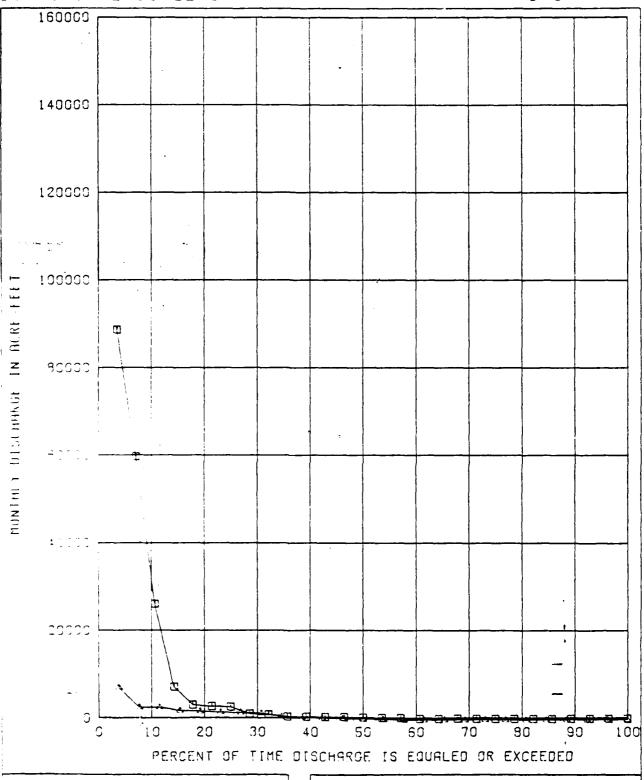
POST-IMPOUNDMENT CONDITIONS (PERIOD OF RECORD 1952-1979)

COLORROD RIVER SAGIN, TEXAS C.C. FISHER LAKE

FLOW DURATION CURVES AT DAM SITE

JUNE FLOWS

U.S. ARMY ENGINEER DISTRICT. FORT WORTH TO ACCOMPANY INSTREAM FLOW PROBLEMS AND NEEDS EVALUATION REPORT OF DESEMBER 1390 PLATE 18



> ▲ POST-[HPOUNCHENT CONDITIONS | PERIOD OF RECORD | 1952-1978;

COLORROD RIVER BASIN. TEXAS

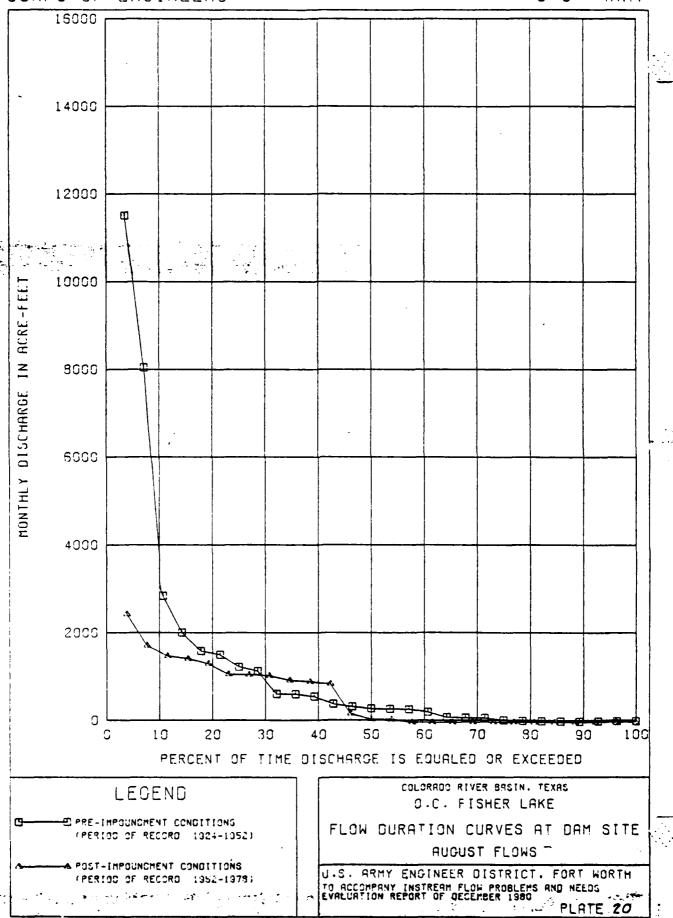
O.C. FISHER LAKE

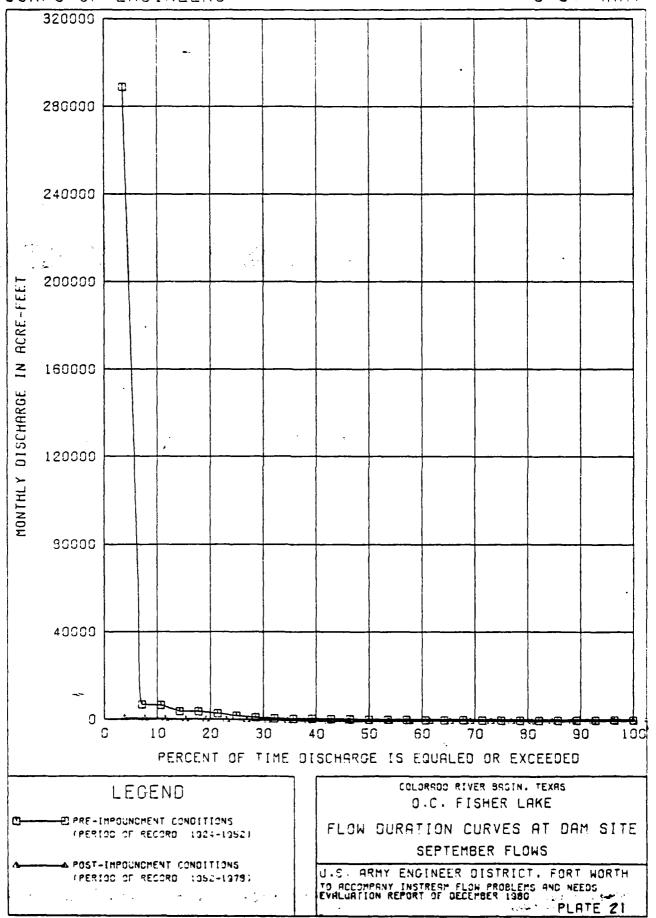
FLOW DURATION CURVES AT DAM SITE JULY FLOWS

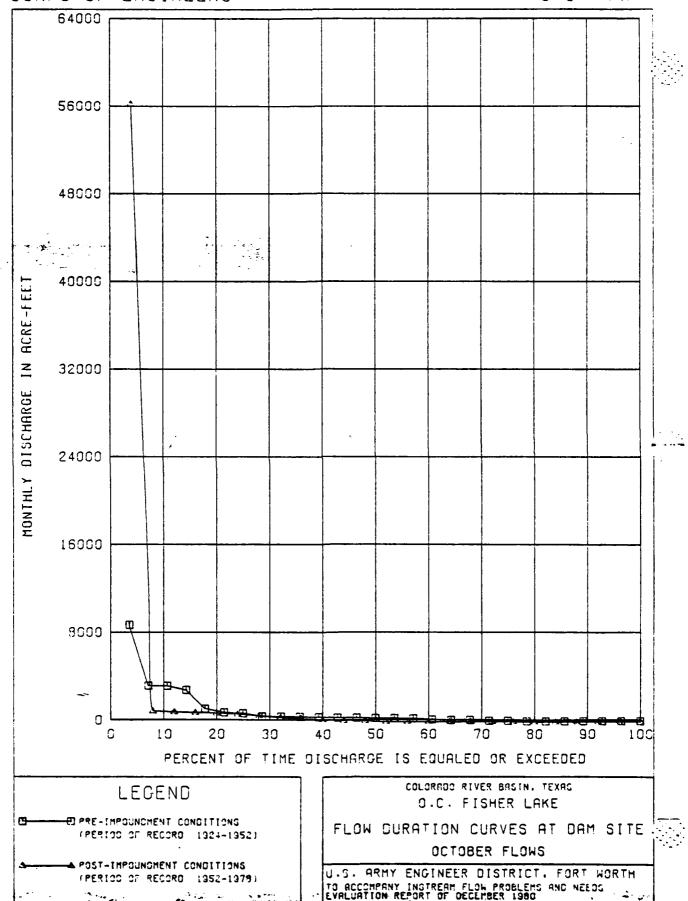
U.S. ARMY ENGINEER DISTRICT. FORT WORTH
TO ACCOMPANY INSTREAM FLOW PROBLEMS AND NEEDS
EVALUATION REPORT OF DESCRIBER 1980
PLATE 19



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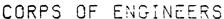
母 PRE-IMPOUNCMENT CONGITIONS (PERIOD OF RECORD 1924-1952)

POST-IMPOUNDMENT CONDITIONS (PERIOD OF RECORD 1952-1979)

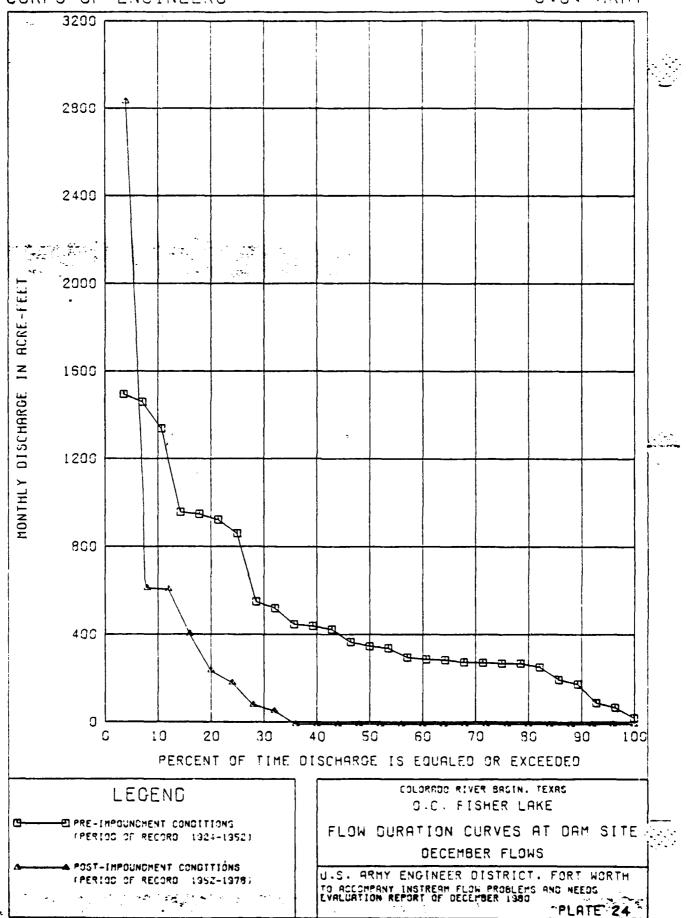
O.C. FISHER LAKE

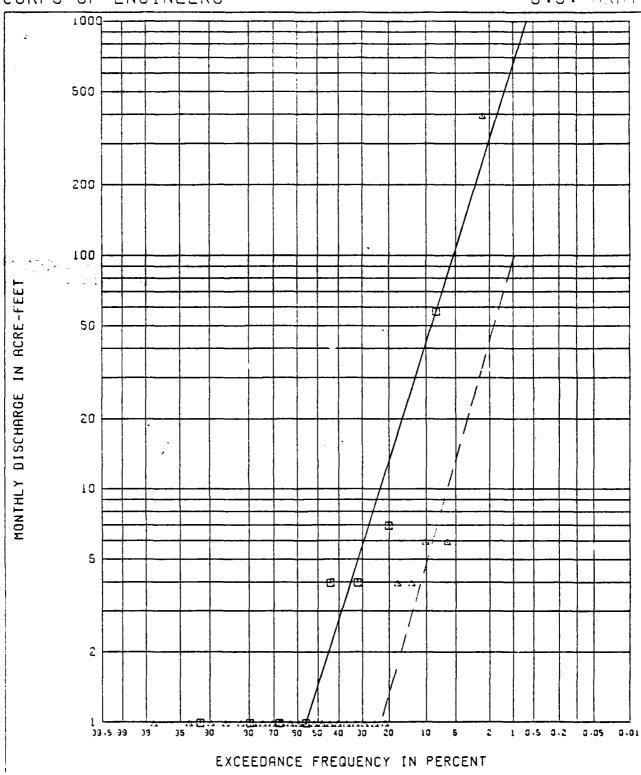
FLOW DURATION CURVES AT DAM SITE NOVEMBER FLOWS

U.S. ARMY ENGINEER DISTRICT. FORT WORTH TO ACCOMPANY INSTREMM FLOW PROBLEMS AND NEEDS EVALUATION REPORT OF DECEMBER 1980 PLATE 23



U.S. ARMY





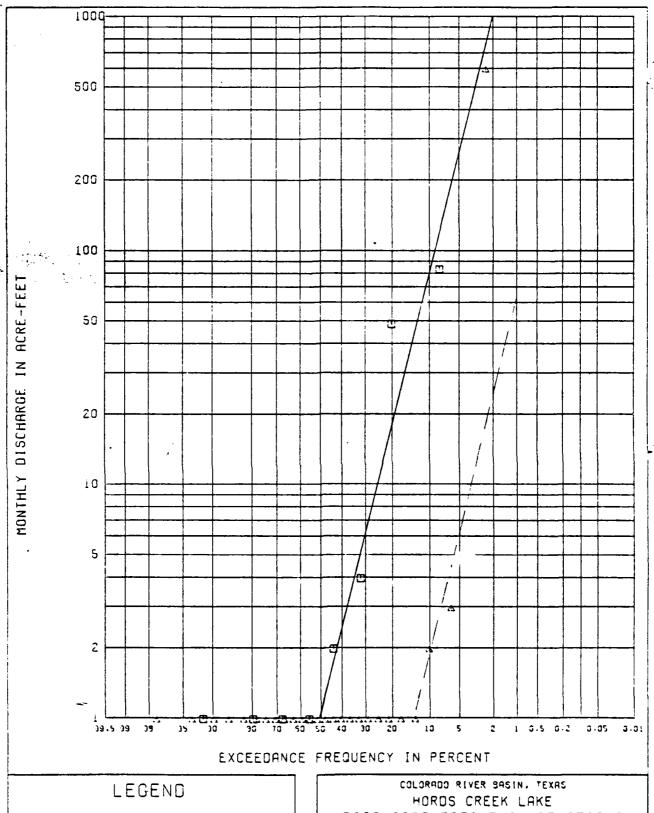
PRE-IMPOUNDMENT CONDITIONS
(PERIOD OF RECORD 1940-1949)

- - A POST-IMPOUNDMENT CONDITIONS
(PERIOD OF RECORD 1953-1979)

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COLORADO RIVER BASIN. TEXAS
HORD'S CREEK LAKE
DISCHARGE-FREQUENCY RELATIONS
AT DAM SITE
JANUARY FLOWS

U.S. ARMY ENGINEER DISTRICT. FORT HORTH
TO ACCOMPANY INSTREMM FLOW PROBLEMS AND NEEDS
EVALUATION REPORT OF DECEMBER 1980
PLATE T

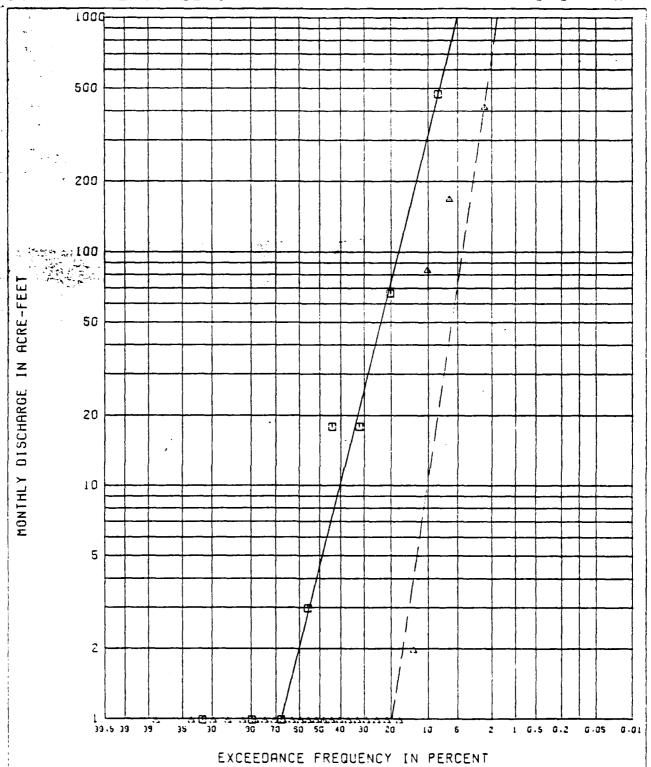


PRE-IMPOUNDMENT CONDITIONS (PERIOD OF RECORD 1940-1949)

- - - POST-IMPOUNDMENT CONDITIONS (PERIOD OF RECORD 1953-1979)

COLORADO RIVER SASIN, TEXAS
HORDS CREEK LAKE
DISCHARGE-FREQUENCY RELATIONS
AT DAM SITE
FEBRUARY FLOWS

U.S. ARMY ENGINEER DISTRICT. FORT WORTH TO ACCOMPANY INSTREAM FLOW PROBLEMS AND NEEDS EVALUATION REPORT OF DECEMBER 1980 PLATE-2



LEGEND

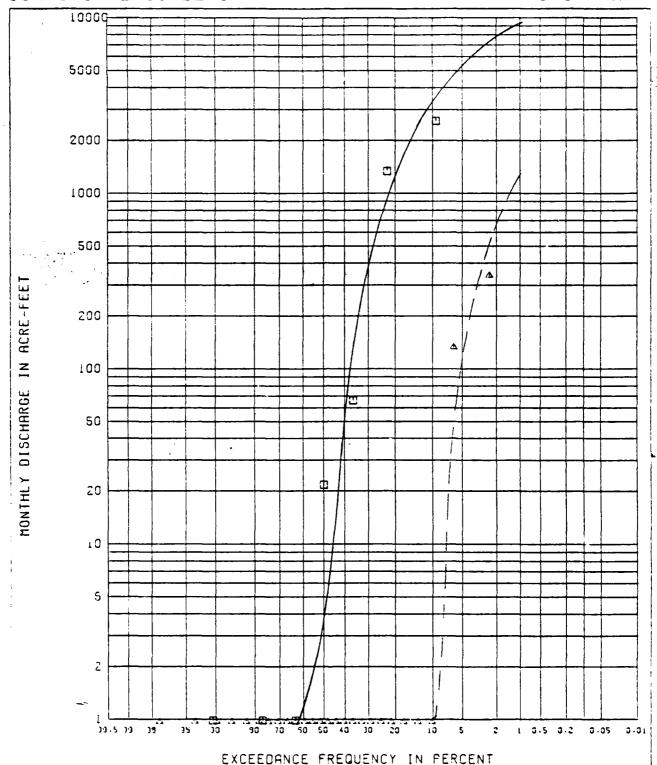
PRE-IMPOUNDMENT CONDITIONS
(PERIOD OF RECORD 1940-1943)

- - POST-IMPOUNDMENT CONDITIONS
(PERIOD OF RECORD 1953-1979)

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COLORADO RIVER SASIN. TEXAS
HORDS CREEK LAKE
DISCHARGE-FREQUENCY RELATIONS
AT DAM SITE
MARCH FLOWS

U.S. ARMY ENGINEER DISTRICT. FORT WORTH TO ACCOMPANY INSTREAM FLOW PROBLEMS AND NEEDS EVALUATION REPORT OF DECEMBER 1990 PLATE S



ENGLEDINGE TREGGENOT

LEGEND

PERIOD OF RECORD 1940-1948)

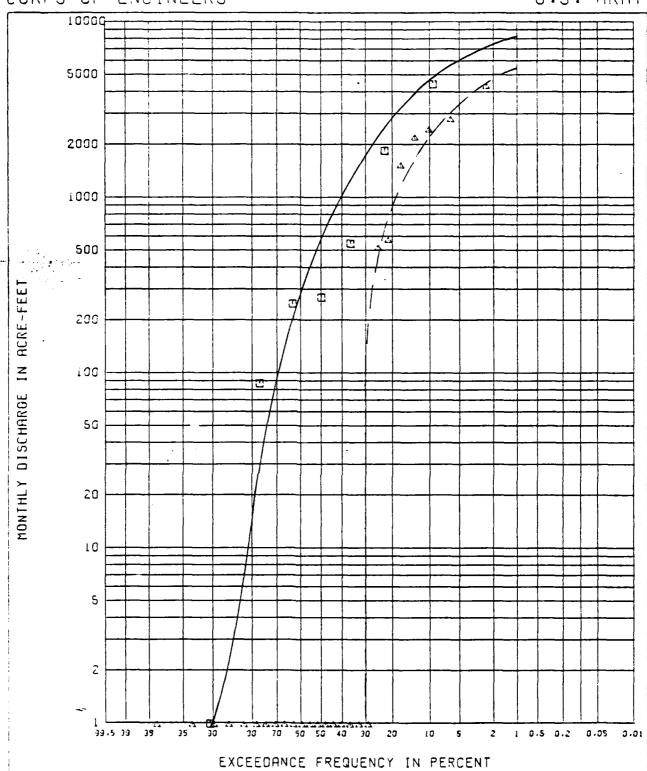
- - POST-INPOUNCHENT CONDITIONS

(PERIOD OF RECORD 1950-1978)

COLORADO RIVER BASIN. TEXAS
HORDS CREEK LAKE
DISCHARGE-FREQUENCY RELATIONS
AT DAM SITE
APRIL FLOWS

U.S. ARMY ENGINEER DISTRICT. FORT WORTH
TO ACCOMPANY INSTREAM FLOW PROBLEMS AND NEEDS
EVALUATION REPORT OF DECEMBER 1350

PLATE 4

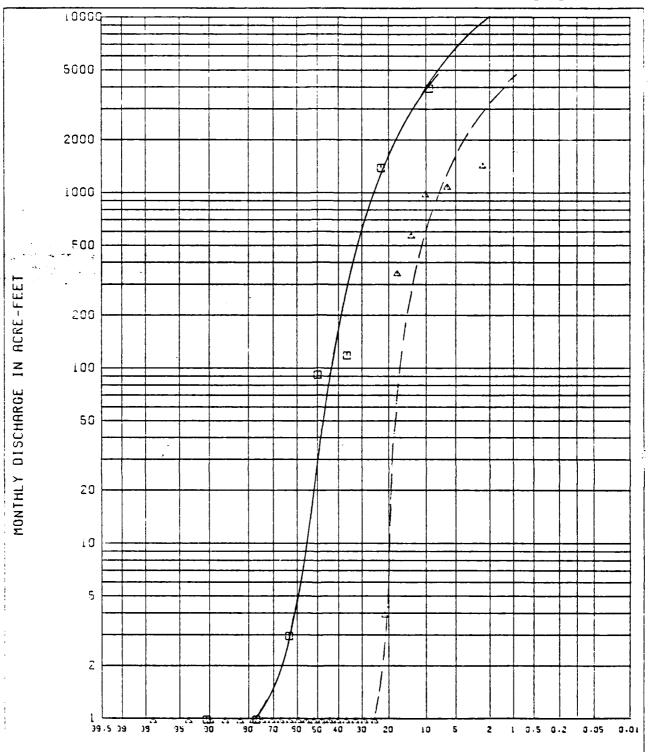


PRE-IMPOUNDMENT CONDITIONS
(PERIOD OF RECORD 1940-1948)

- -- POST-IMPOUNDMENT CONDITIONS
(PERIOD OF RECORD 1953-1979)

COLORADO RIVER BASIN. TEXAS
HORDS CREEK LAKE
DISCHARGE-FREQUENCY RELATIONS
AT DAM SITE
MAY FLOWS

U.S. ARMY ENGINEER DISTRICT. FORT WORTH TO ACCOMPANY INSTREAM FLOW PROBLEMS AND NEEDS EVALUATION REPORT OF DECEMBER 1990



EXCEEDANCE FREQUENCY IN PERCENT

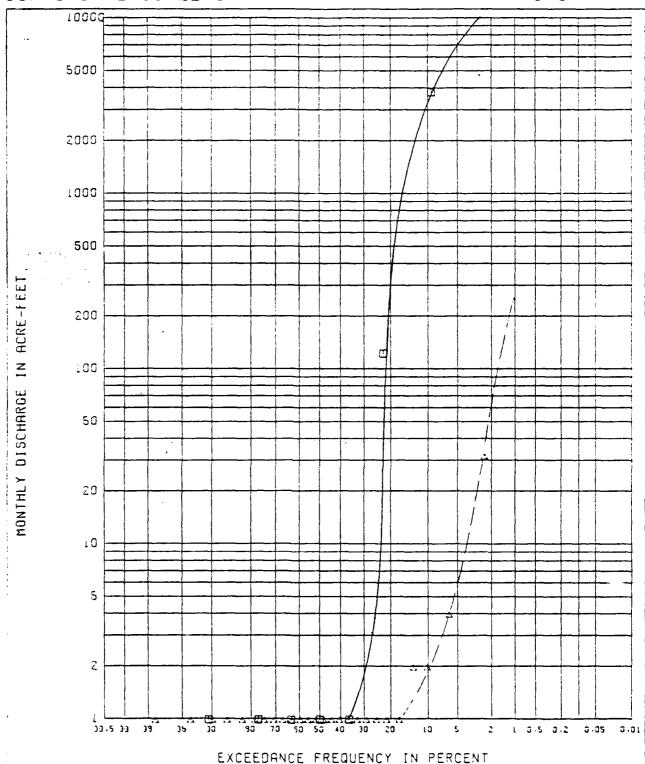
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PRE-IMPOUNDMENT CONDITIONS
(PERIOD OF RECORD 1940-1948)

- - - - POST-IMPOUNDMENT CONDITIONS
(PERIOD OF RECORD 1953-1979)

COLORADO RIVER BASIN, TEXAS
HORDS CREEK LAKE
DISCHARGE-FREQUENCY RELATIONS
AT DAM SITE
JUNE FLOWS

U.S. ARMY ENGINEER DISTRICT, FORT HORTH
TO ACCOMPANY INSTREAM FLOW PROBLEMS AND NEEDS
EVALUATION REPORT OF DECEMBER 1980
*PLATE 6



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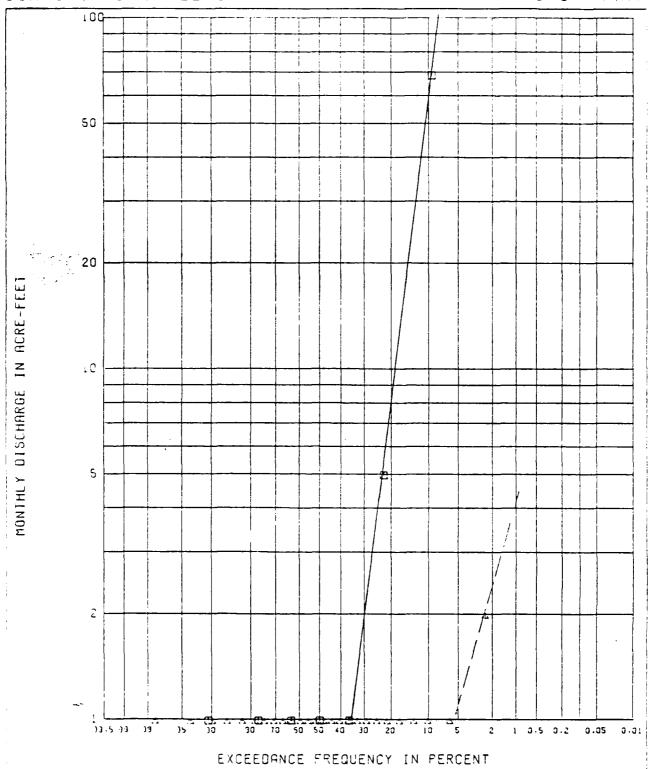
PRE-IMPOUNDMENT CONDITIONS
(PERIOD OF RECORD 1940-1948)

→ → POST-IMPOUNDMENT CONDITIONS
(PERIOD OF RECORD 1953-1979)

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COLORADO RIVER SASIN. TEXAS
HORDS CREEK LAKE
DISCHARGE-FREQUENCY RELATIONS
AT DAM SITE
JULY FLOWS

U.S. ARMY ENGINEER DISTRICT. FORT HORTH
TO ACCOMPANY INSTREAM FLOW PROBLEMS AND NEEDS
EVALUATION REPORT OF DECEMBER 1890
PLATE 7

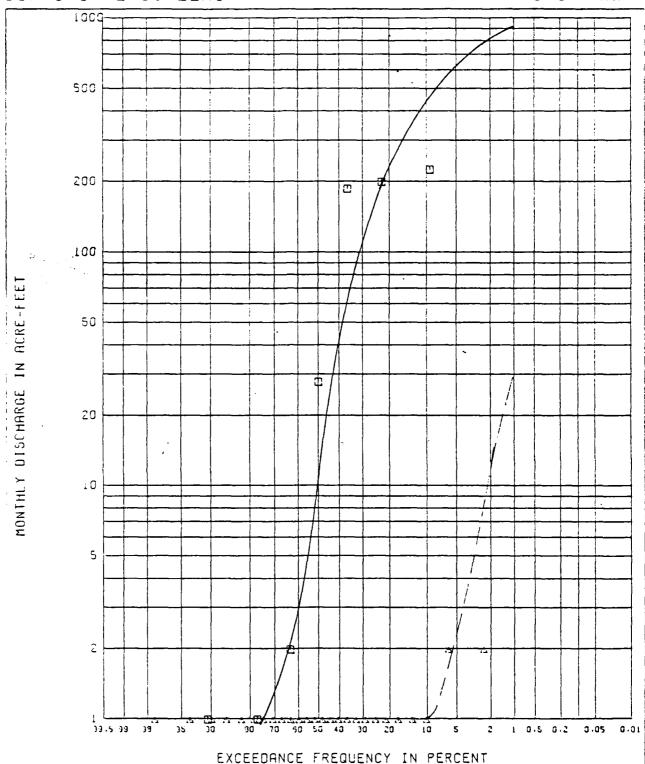


PRE-IMPOUNDMENT CONDITIONS
(PERIOD OF PECORO 1040-1948)

- -- POST-IMPOUNDHENT CONCITIONS
(PERIOD OF RECORD 1953-1978)

COLORADO RIVER BASIN, TEXAS
HORDS CREEK LAKE
DISCHARGE-FREQUENCY RELATIONS
AT DAM SITE
AUGUST FLOWS

U.S. ARMY ENGINEER DISTRICT. FORT WORTH TO ACCOMPANY INSTREAM FLOW PROBLEMS AND NEEDS EVALUATION REPORT OF DECEMBER 1380 PLATE 8

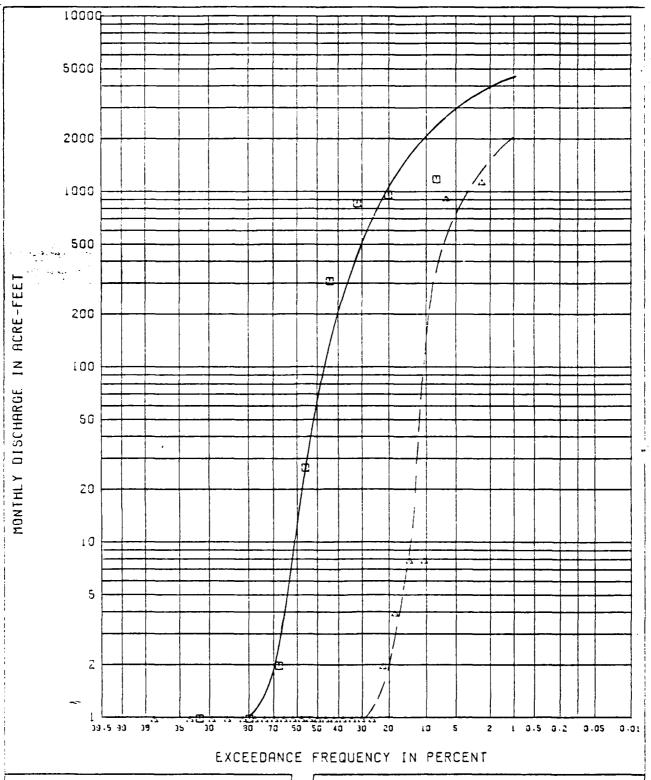


PRE-IMPOUNDMENT CONDITIONS
(PERIOD OF RECORD 1940-1949)

- - A POST-IMPOUNDMENT CONDITIONS
(PERIOD OF RECORD 1953-1979)

COLORADO RIVER SASIN. TEXAS
HORDS CREEK LAKE
DISCHARGE-FREQUENCY RELATIONS
AT DAM SITE
SEPTEMBER FLOWS

U.S. ARMY ENGINEER DISTRICT. FORT WORTH
TO ACCOMPANY INSTREAM FLOW PROBLEMS AND MEEDS
EVALUATION REPORT OF DECEMBER 1990
PLATE: 9



PRE-IMPOUNDMENT CONDITIONS

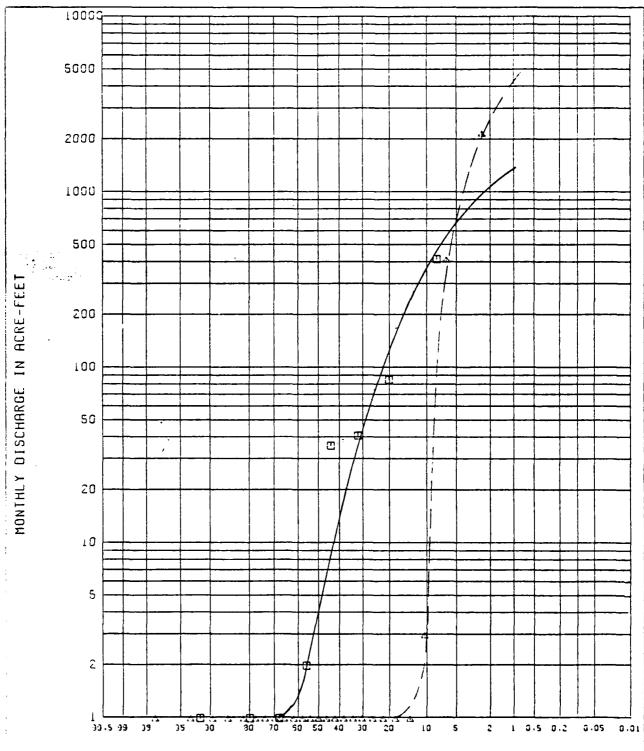
(PERIOD OF RECORD 1940-1949)

→ → POST-IMPOUNDMENT CONDITIONS

(PERIOD OF RECORD 1953-1979)

COLORADO RIVER BASIN. TEXAS
HORDS CREEK LAKE
DISCHARGE-FREQUENCY RELATIONS
AT DAM SITE
OCTOBER FLOWS

U.S. ARMY ENGINEER DISTRICT, FORT WORTH TO ACCOMPANY INSTREAM FLOW PROBLEMS AND NEEDS EVALUATION REPORT OF DECEMBER 1990



EXCEEDANCE FREQUENCY IN PERCENT

LEGEND

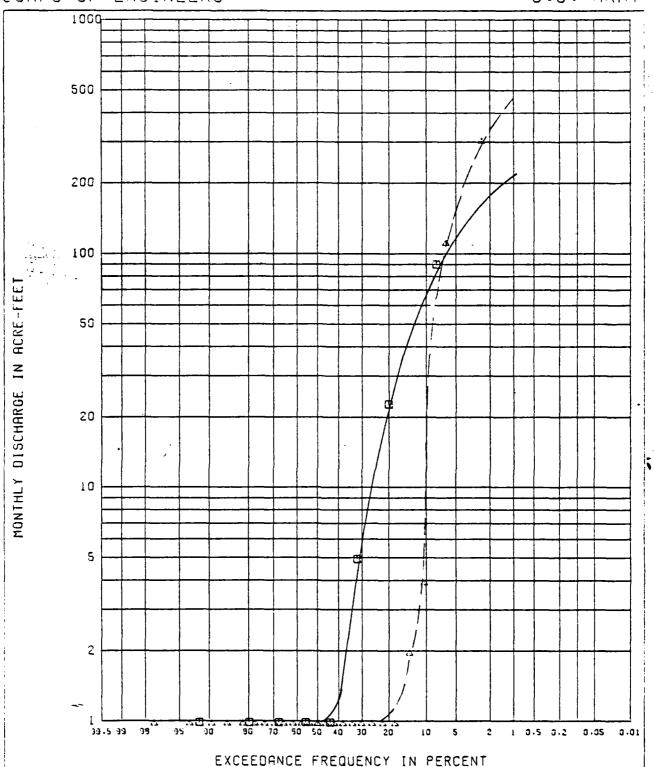
PRE-IMPOUNDMENT CONDITIONS
(PERIOD OF RECORD 1940-1949)

► - → POST-IMPOUNDMENT CONDITIONS

(PERIOD OF RECORD 1953-1979)

COLORADO RIVER BASIN, TEXAS
HORDS CREEK LAKE
DISCHARGE-FREQUENCY RELATIONS
AT DAM SITE
NOVEMBER FLOWS

U.S. ARMY ENGINEER DISTRICT. FORT WORTH
TO ACCOMPANY INSTREAM FLOM PROBLEMS AND NEEDS
EVALUATION REPORT OF DECEMBER 1990
PLATE 11



PRE-IMPOUNDMENT CONDITIONS

(PERIOD OF RECORD 1940-1948)

- - A POST-(MPOUNDMENT CONDITIONS
(PERIOD OF RECORD 1953-1979)

COLORADO RIVER BASIN. TEXAS

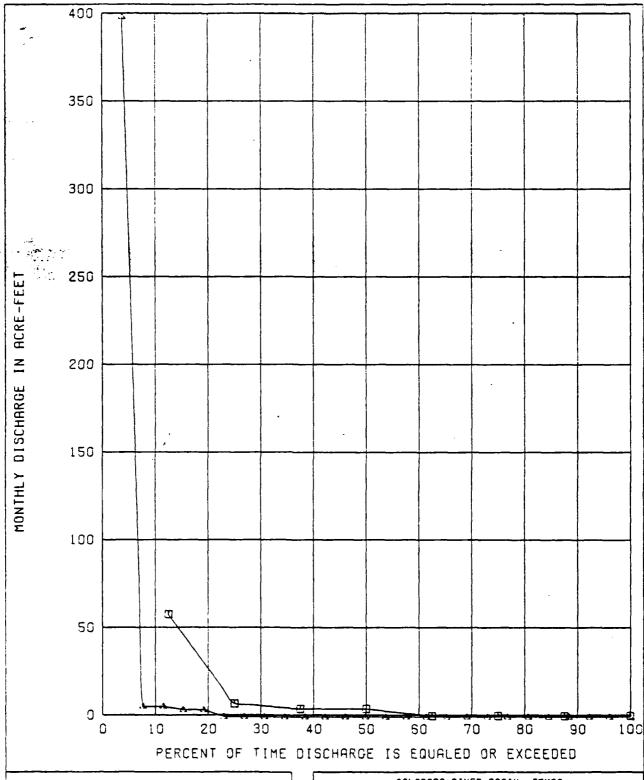
HORDS CREEK LAKE

DISCHARGE-FREQUENCY RELATIONS

AT DAM SITE

DECEMBER FLOWS

U.S. ARMY ENGINEER DISTRICT. FORT WORTH
TO ACCOMPANY INSTREMM FLOW PROBLEMS AND NEEDS
EVALUATION REPORT OF DECEMBER 1990
-PLATE 12

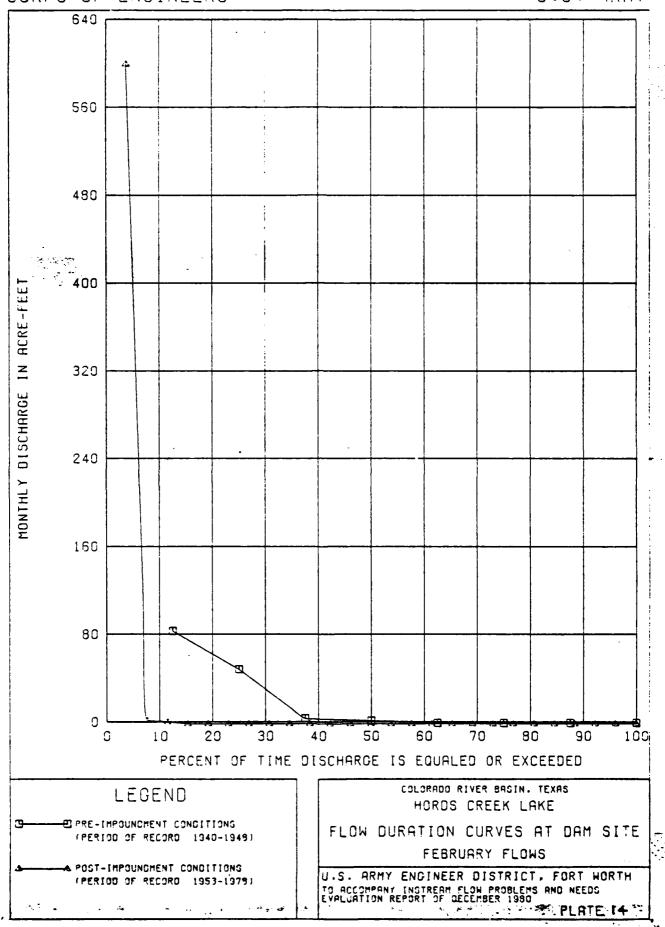


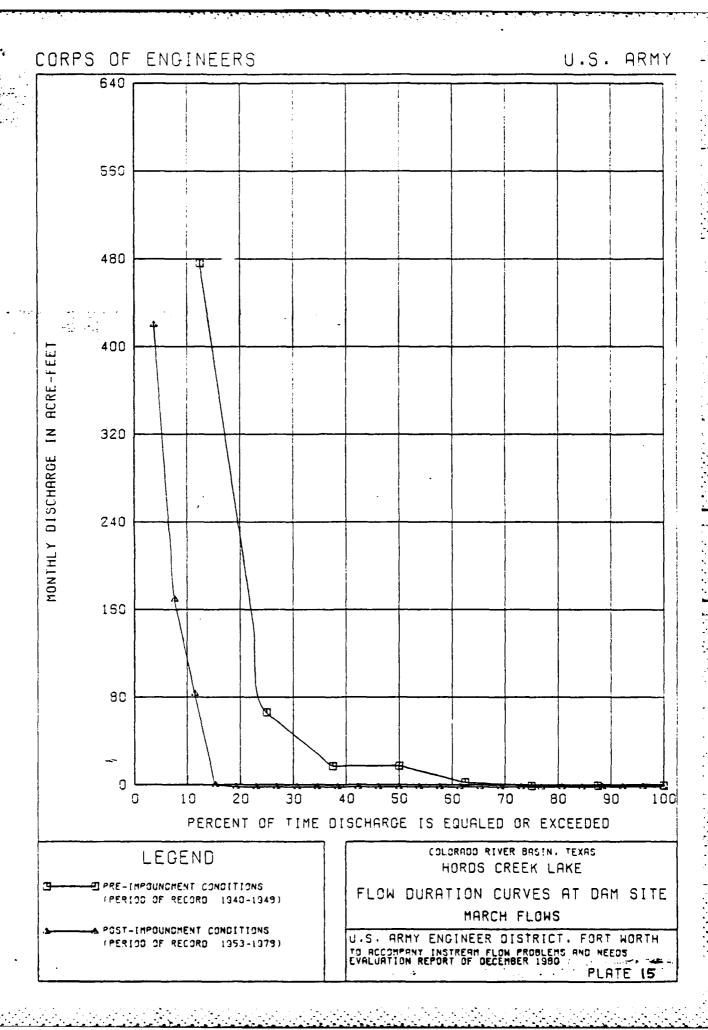
2 PRE-IMPOUNDMENT CONDITIONS (PERIOD OF RECORD 1940-1949)

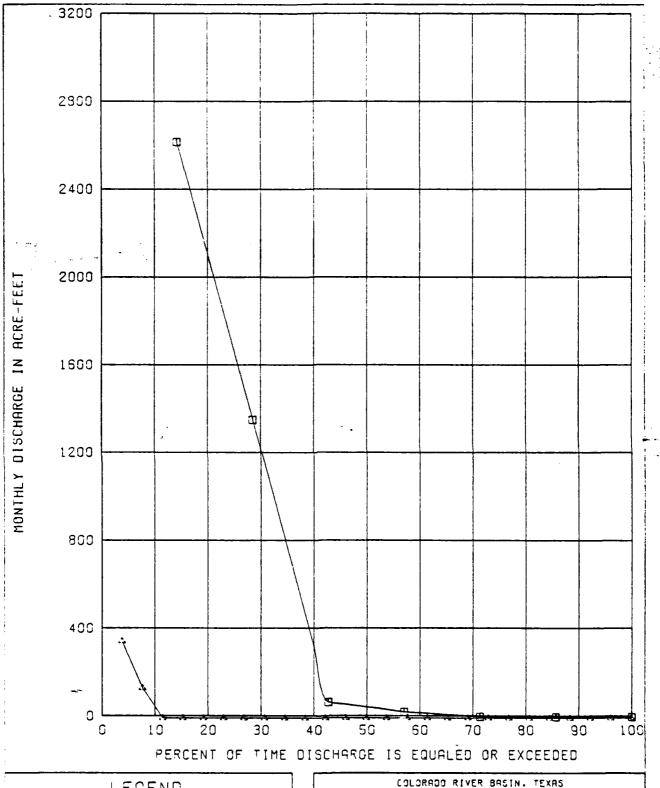
A POST-IMPOUNDMENT CONDITIONS (PERIOD OF RECORD 1953-1979) COLORADO RIVER BASIN. TEXAS HORDS CREEK LAKE

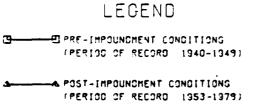
FLOW DURATION CURVES AT DAM SITE JANUARY FLOWS

U.S. ARMY ENGINEER DISTRICT. FORT WORTH TO ACCOMPANY INSTREAM FLOW PROBLEMS AND NEEDS EVALUATION REPORT OF DECEMBER 1980



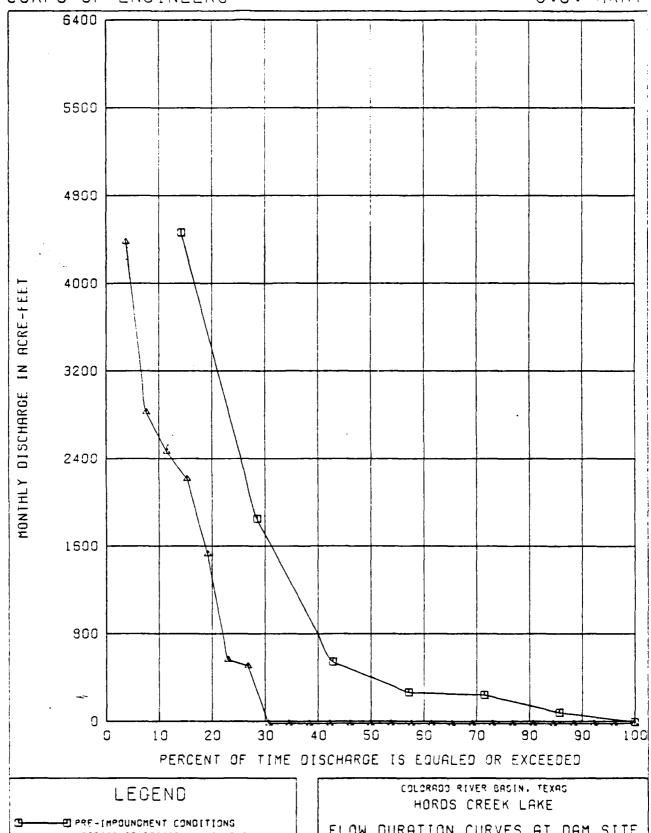






HORDS CREEK LAKE
FLOW DURATION CURVES AT DAM SITE
APRIL FLOWS

U.S. ARMY ENGINEER DISTRICT. FORT HORTH
TO ACCOMPANY INSTREAM FLOW PROBLEMS AND NEEDS
EVALUATION REPORT OF DECEMBER 1990
PLATE 16

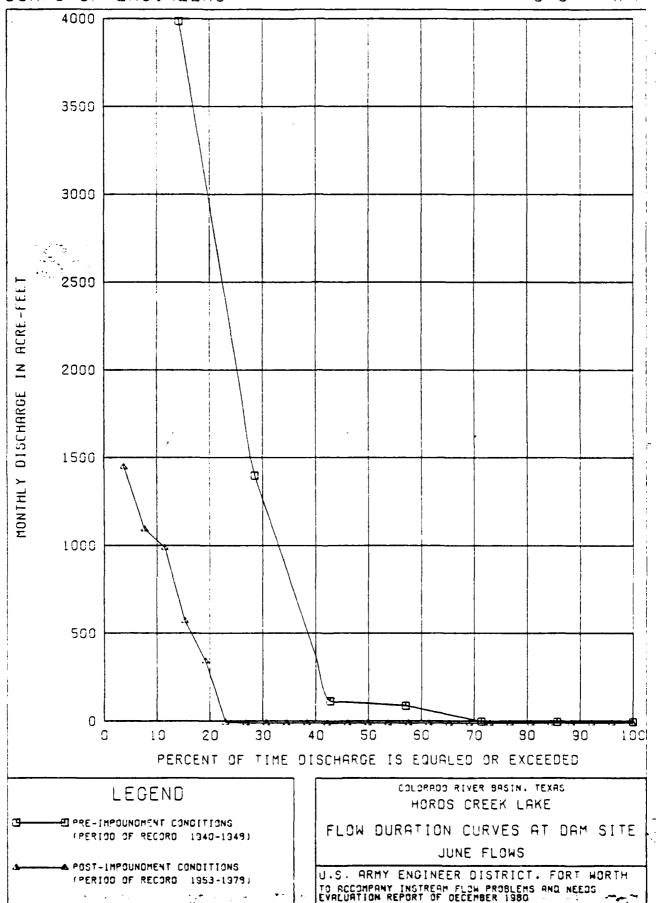


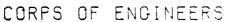
PERIOD OF RECORD 1940-19491 POST-IMPOUNCHENT CONDITIONS (PERIOD OF RECORD 1953-1979)

FLOW DURATION CURVES AT DAM SITE MAY FLOWS

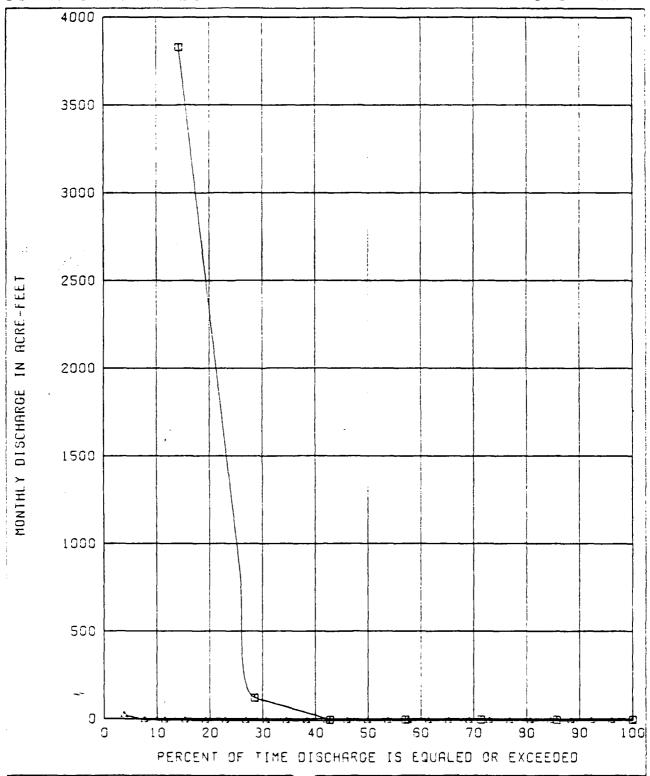
U.S. ARMY ENGINEER DISTRICT, FORT WORTH TO RECOMPANY INSTREAM FLOW PROBLEMS AND NEEDS EVALUATION REPORT OF DECEMBER 1990 PLATE 17

PLATE 18





U.S. ARMY





PRE-IMPOUNDMENT CONDITIONS
(PERIOD OF RECORD 1940-1949)

POST-IMPOUNGMENT CONDITIONS (PERIOD OF RECORD 1953-1979)

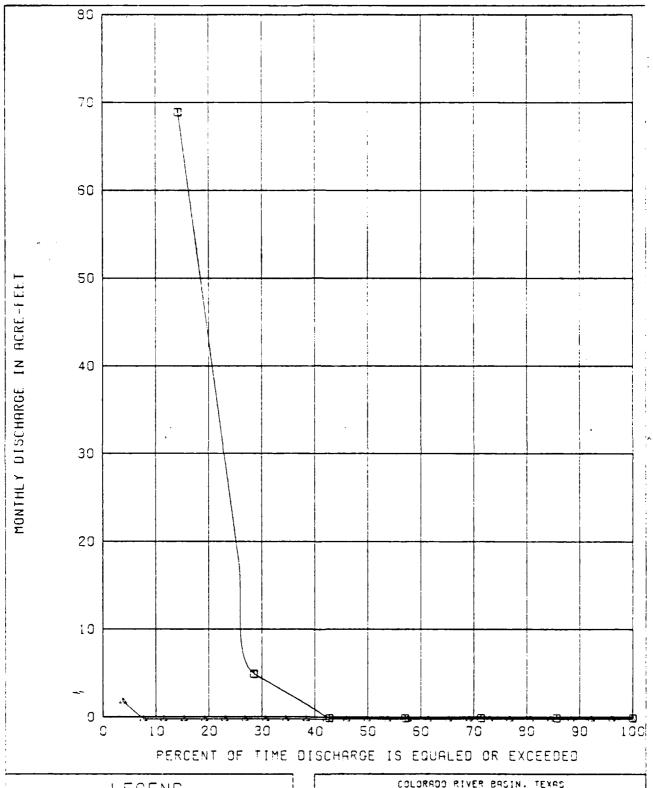
COLORADO RIVER BASIN, TEXAS HORDS CREEK LAKE

FLOW DURATION CURVES AT DAM SITE

JULY FLOWS

U.S. ARMY ENGINEER DISTRICT. FORT WORTH
TO ACCOMPANY INSTREAM FLOW PROBLEMS AND NEEDS
EVALUATION REPORT OF DECEMBER 1980

PLATE 19





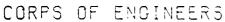
DPRE-IMPOUNDMENT CONDITIONS
(PERIOD OF RECORD 1040-1049)

POST-IMPOUNDMENT CONDITIONS (PERIOD OF RECORD 1953-1979)

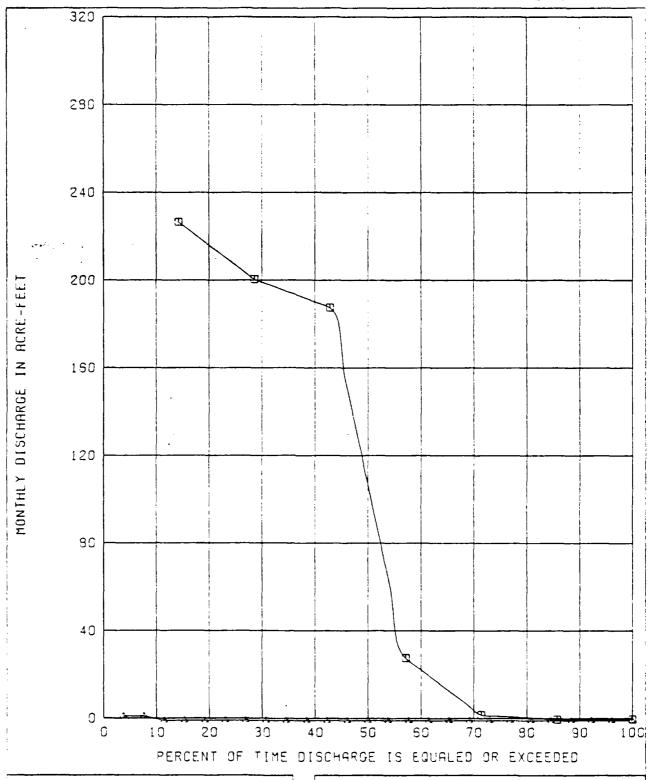
COLORADO RIVER BASIN, TEXAS HORDS CREEK LAKE

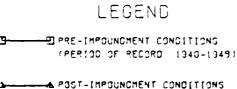
FLOW DURATION CURVES AT DAM SITE AUGUST FLOWS

U.S. ARMY ENG NEER DISTRICT. FORT WORTH
TO ACCOMPANY INSTREAM FLOW PROBLEMS AND NEEDS
EVALUATION REPORT OF DECEMBER 1980
PLATE 20



U.S. ARMY

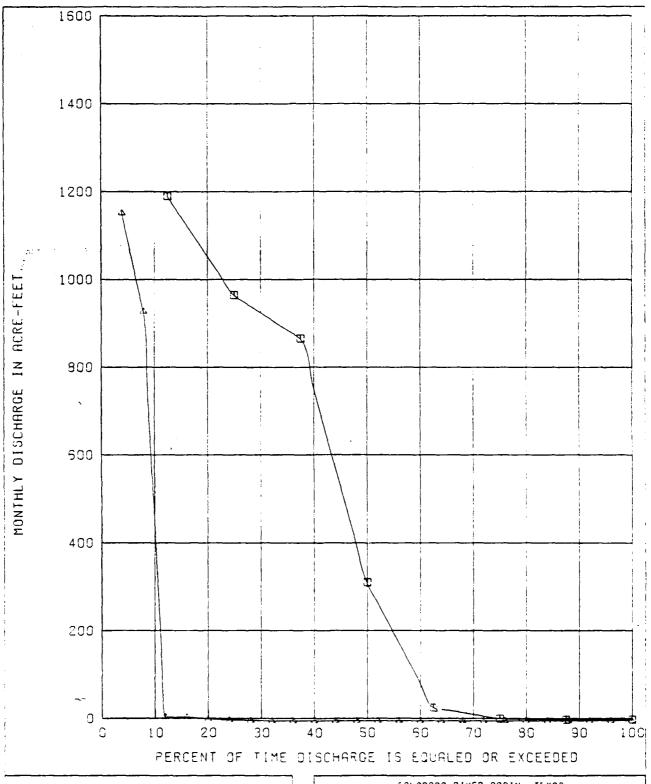




▲ POST-IMPOUNDMENT CONDITIONS (PERIOD OF RECORD 1953-1979) COLORROD RIVER BASIN, TEXAS HORDS CREEK LAKE

FLOW DURATION CURVES AT DAM SITE SEPTEMBER FLOWS

U.S. ARMY ENGINEER DISTRICT. FORT WORTH
TO ACCOMPANY INSTREAM FLOW PROBLEMS AND NEEDS
EVALUATION REPORT OF DECEMBER 1980
PLATE 21



PRE-IMPOUNDMENT CONDITIONS
(PEPIOD OF RECORD 1940-1949)

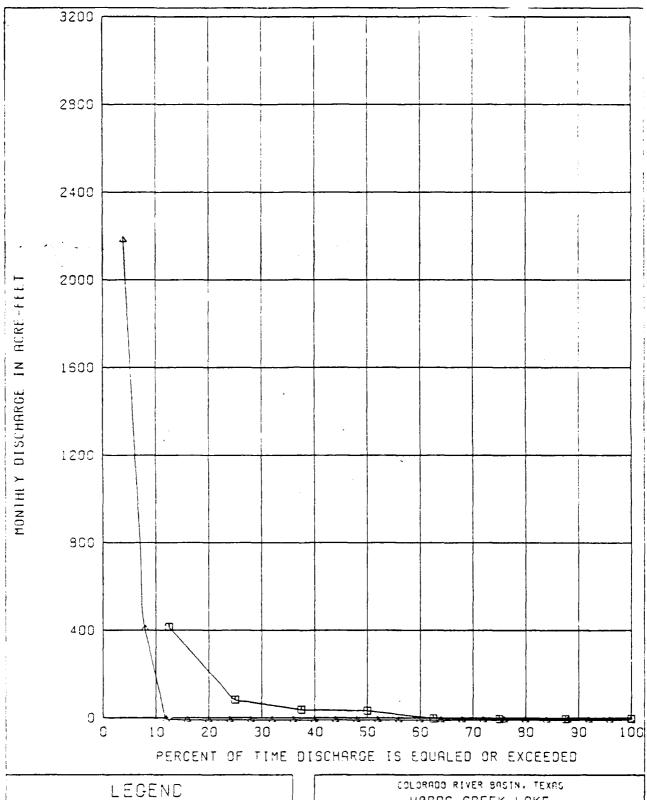
POST-IMPOUNDMENT CONDITIONS (PEPIOD OF RECORD 1953-1979)

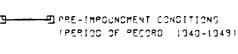
COLORROD RIVER BASIN, TEXAS HORDS CREEK LAKE

FLOW DURATION CURVES AT DAM SITE OCTOBER FLOWS

U.S. ARMY ENGINEER DISTRICT. FORT WORTH TO ACCOMPANY INSTREAM FLOW PROBLEMS AND MEEDS EVALUATION REPORT OF DECEMBER 1990

PLATE 22

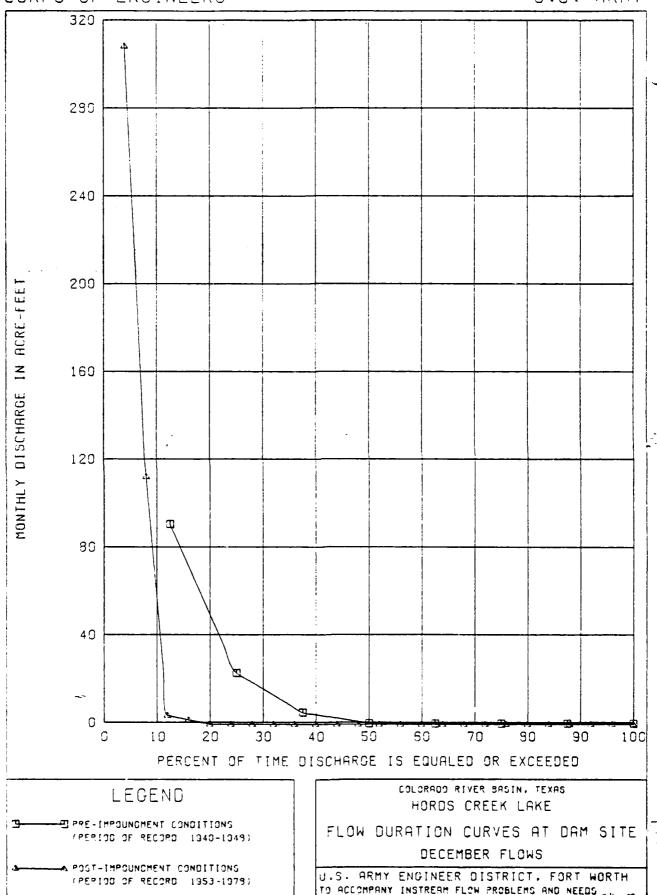


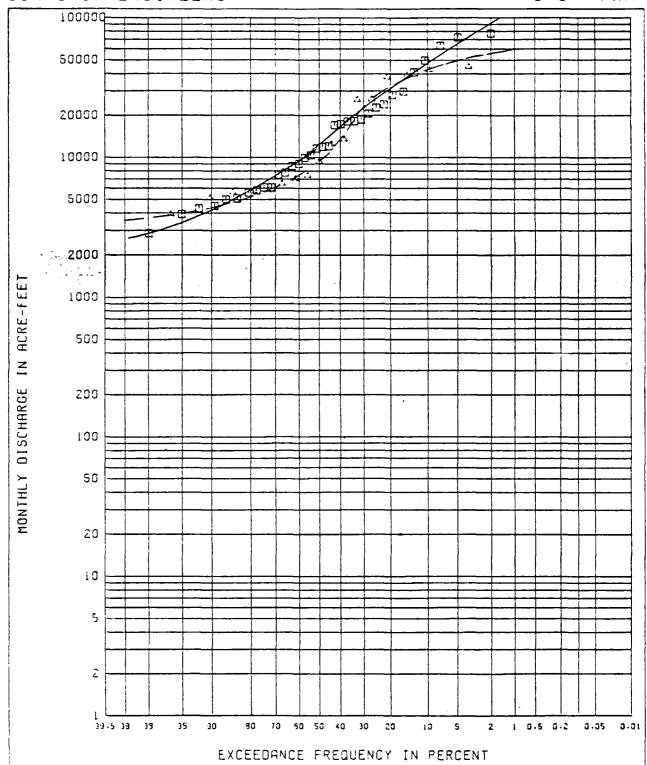


POST-IMPOUNDMENT CONDITIONS (PERIOD OF RECORD 1953-1979) HORDS CREEK LAKE

FLOW DURATION CURVES AT DAM SITE NOVEMBER FLOWS

U.S. ARMY ENGINEER DISTRICT, FORT WORTH TO ACCOMPANY INSTREAM FILM PROBLEMS AND MEEDS PLATE 23





PRE-IMPOUNDMENT CONDITIONS

(PERIOD OF RECORD 1915-1949)

- - - POST-IMPOUNDMENT CONDITIONS
(PERIOD OF RECORD 1963-1979)

GUADALUPE RIVER BASIN. TEXAS

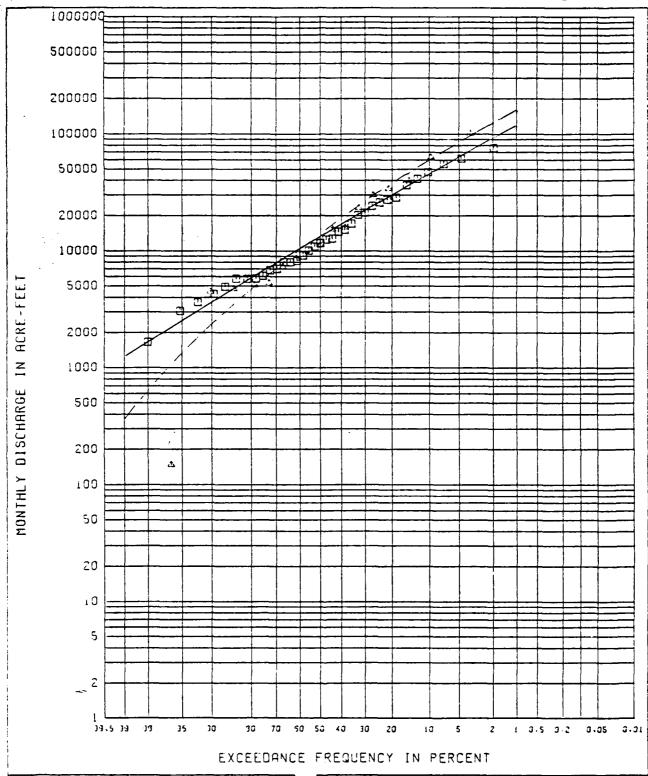
CANYON LAKE

DISCHARGE-FREQUENCY RELATIONS

AT DAM SITE

JANUARY FLOWS

U.S. ARMY ENGINEER DISTRICT. FORT WORTH
TO ACCOMPANY INSTREAM FLOW PROBLEMS AND NEEDS
EVALUATION REPORT OF DECEMBER 1980



The PRE-IMPOUNDMENT CONDITIONS

(PERIOD OF RECORD 1015-1040)

- - - POST-IMPOUNDMENT CONDITIONS
(PERIOD OF RECORD 1963-1979)

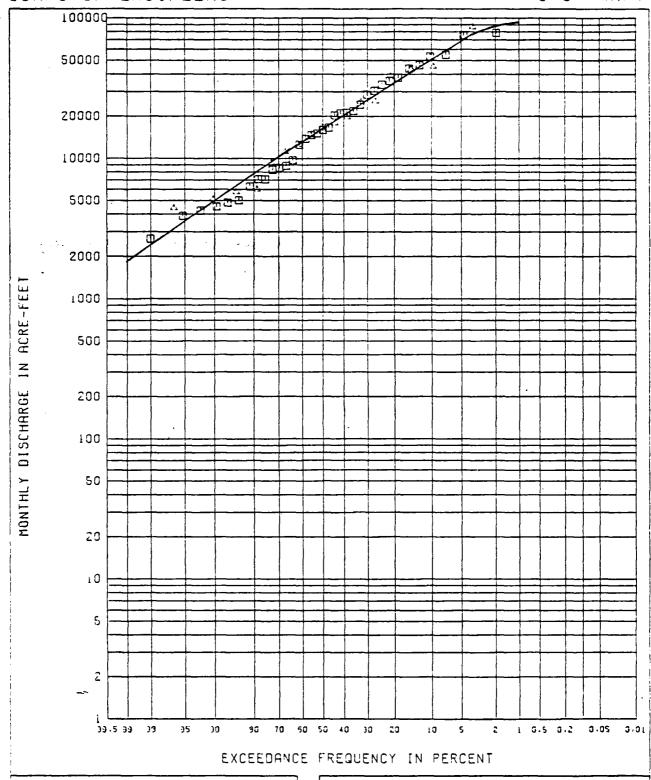
CHADALUPE RIVER SASIN, TEXAS

CANYON LAKE

DISCHARGE-FREQUENCY RELATIONS
AT DAM SITE

FEBRUARY FLOWS

U.S. ARMY ENGINEER DISTRICT. FORT WORTH
TO RECOMPANY INSTREAM FLOH PROBLEMS AND NEEDS
EVALUATION REPORT OF DECEMBER 1980
PLATE 2



THE PRE-IMPOUNDMENT CONDITIONS (PERIOD OF RECORD 1015-1040)

► - - POST-IMPOUNDMENT CONDITIONS
(PERIOD OF RECORD 1963-1973)

GUADALUPE RIVER BASIN, TEXAS

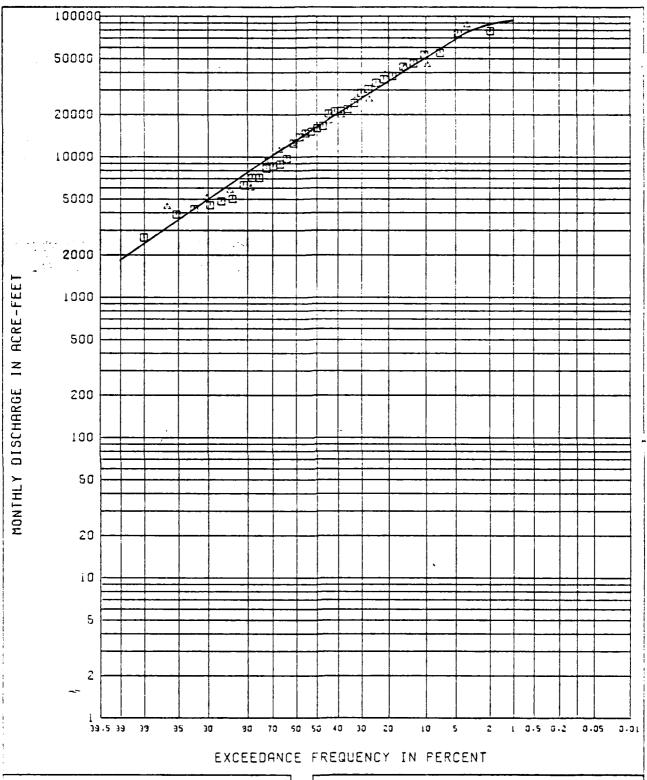
CANYON LAKE

DISCHARGE-FREQUENCY RELATIONS

AT DAM SITE

MARCH FLOWS

U.S. ARMY ENGINEER DISTRICT, FORT WORTH
TO ACCOMPANY INSTREAM FLOW PROBLEMS AND NEEDS
EVALUATION REPORT OF DECEMBER 1980
PLATE 3



PRE-IMPOUNDMENT CONDITIONS

(PERIOD OF RECORD 1915-1949)

→ → POST-IMPOUNCHENT CONDITIÓNS (PERIOD OF RECORD 1963-1979) GUADALUPE RIVER BASIN, TEXAS

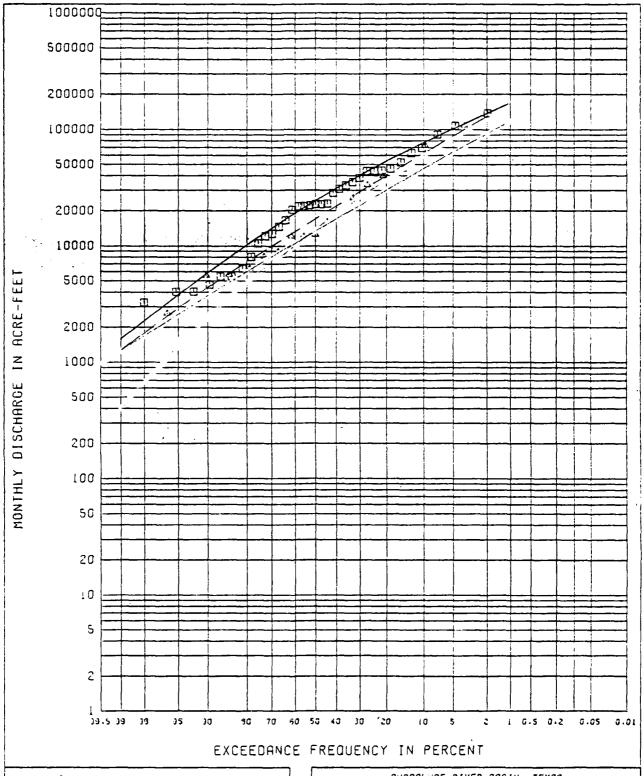
CANYON LAKE

DISCHARGE-FREQUENCY RELATIONS

AT DAM SITE

MARCH FLOWS

U.S. ARMY ENGINEER DISTRICT. FORT WORTH TO ACCOMPANY INSTREAM FLOW PROBLEMS AND MEEDS EVALUATION REPORT OF DECEMBER 1980 PLATE 3



The Pre-Impoundment conditions (Period of Record 1915-1949)

- - POST-IMPOUNDMENT CONDITIONS
(PERIOD OF RECORD 1963-1979)

CURDALUPE RIVER BASIN. TEXAS

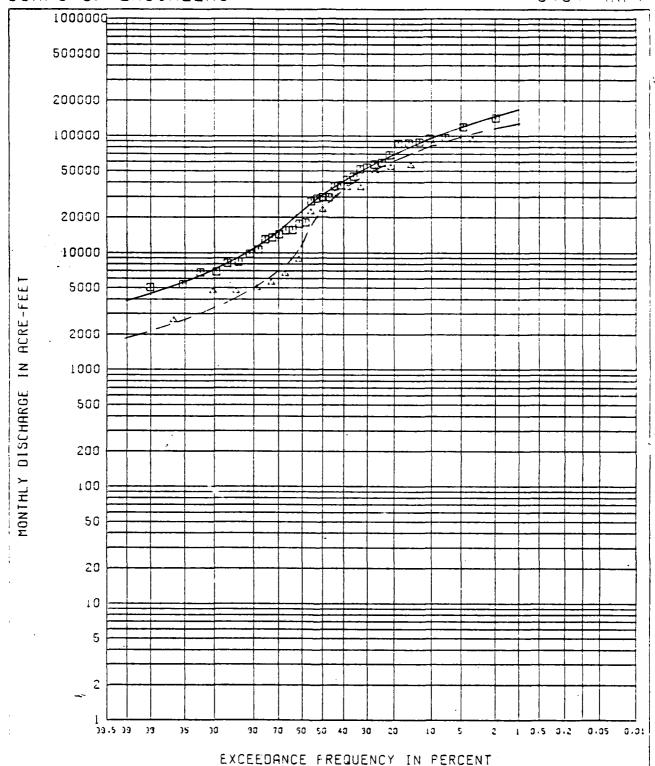
CANYON LAKE

DISCHARGE-FREQUENCY RELATIONS

AT DAM SITE

APRIL FLOWS

U.S. ARMY ENGINEER DISTRICT, FORT WORTH TO ACCOMPANY INSTREAM FLOW PROBLEMS AND MEEDS EVALUATION REPORT OF DECEMBER 1980 PLATE 4



The PRE-IMPOUNCMENT CONDITIONS

(PERIOD OF RECORD 1015-1049)

> - -> POST-IMPOUNDMENT CONDITIONS
(PERIOD OF RECORD 1963-1973)

GUADALUPE RIVER BOSIN, TEXAS

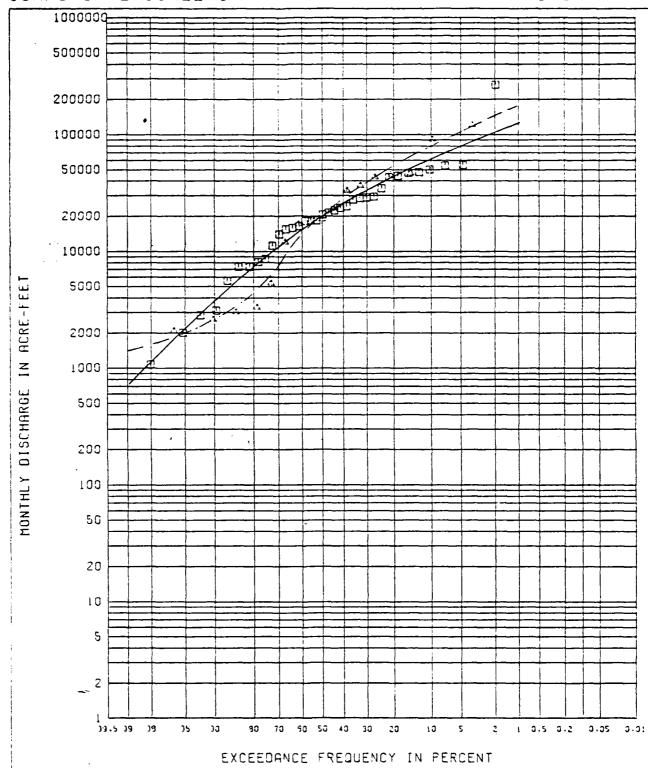
CANYON LAKE

DISCHARGE-FREQUENCY RELATIONS

AT DAM SITE

MAY FLOWS

U.S. ARMY ENGINEER DISTRICT. FORT WORTH
TO ACCOMPANY INSTREAM FLOW PROBLEMS AND NEEDS
EVALUATION REPORT OF DECEMBER 1990
PLATE 5



PRE-IMPOUNDMENT CONDITIONS

(PERIOD OF RECORD 1915-1949)

- - -> POST-IMPOUNDMENT CONDITIONS

(PERIOD OF RECORD 1363-1979)

GUADALUPE RIVER BRSIN, TEXAS

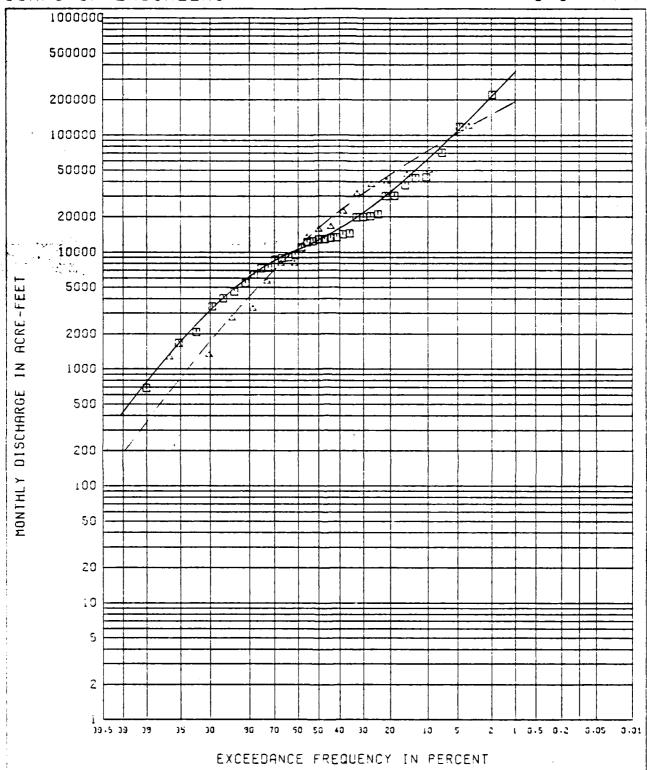
CANYON LAKE

DISCHARGE-FREQUENCY RELATIONS

AT DAM SITE

JUNE FLOWS

U.S. ARMY ENGINEER DISTRICT. FORT WORTH
TO ACCOMPANY MATREAM FLOW PROBLEMS AND NEEDS
EVALUATION REPORT OF DECEMBER 1980
PLATE 6



The Pre-Impoundment conditions (PERIOD OF RECORD 1915-1949)

- - - POST-IMPOUNDMENT CONDITIONS
(PERIOD OF RECORD 1963-1973)

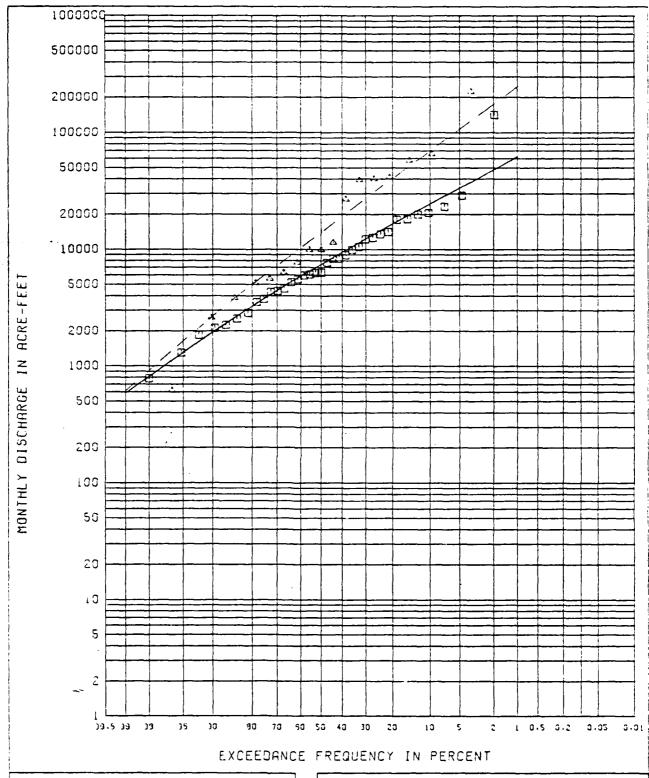
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GUADALUPE RIVER BASIN, TEXAS CANYON LAKE

DISCHARGE-FREQUENCY RELATIONS AT DAM SITE

JULY FLOWS

U.S. ARMY ENGINEER DISTRICT. FORT WORTH
TO ACCOMPANY INSTREAM FLOW PROBLEMS AND NEEDS
EVALUATION REPORT OF DECEMBER 1980
PLATE 7



□------® PRE-IMPOUNDMENT CONDITIONS (PERIOD OF RECORD 1915-1940)

POST-IMPOUNDMENT CONDITIONS

(PERIOD OF RECORD 1363-1373)

GUADALUPE RIVER BASIN, TEXAS

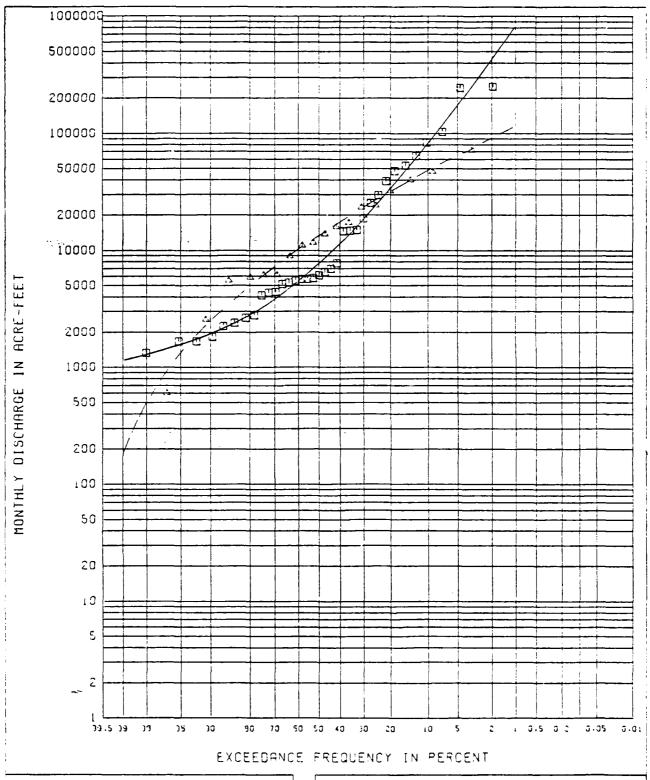
CANYON LAKE

DISCHARGE-FREQUENCY RELATIONS

AT DAM SITE

AUGUST FLOWS

U.S. ARMY ENGINEER DISTRICT. FORT WORTH TO ACCOMPANY INSTREAM FLOW PROBLEMS AND NEEDS EVALUATION REPORT OF DECEMBER 1980 PLATE 8





CPERIOD OF RECORD 1015-1040)

- - - 2 POST-[HPOUNDHENT CONDITIONS (PERIOD OF RECORD 1963-1973)

GUNDALUPE RIVER BASIN, TEXAS

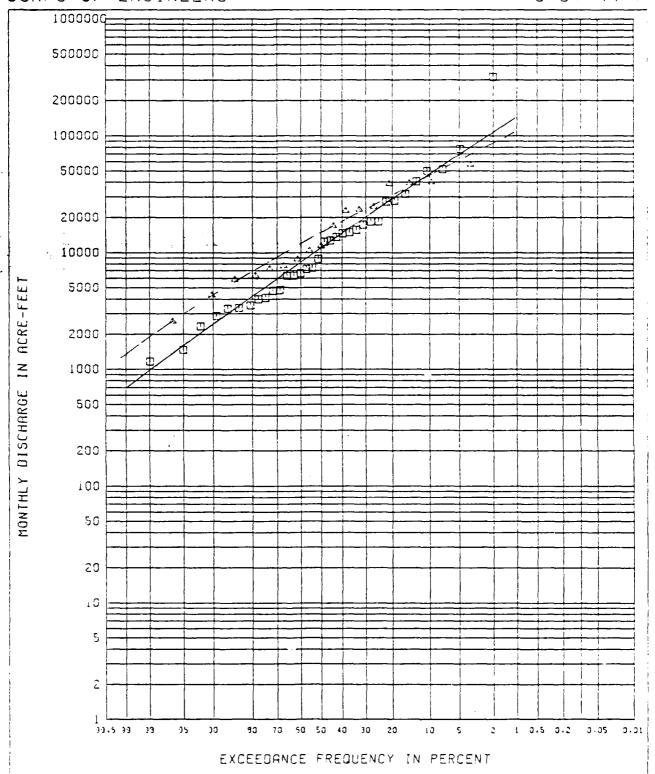
CANYON LAKE

DISCHARGE-FREQUENCY RELATIONS

AT DAM SITE

SEPTEMBER FLOWS

U.S. ARMY ENGINEER DISTRICT. FORT WORTH
TO ACCOMPANY INSTREAM FLOW PROBLEMS AND NEEDS
EVALUATION REPORT OF DECEMBER 1980
PLATE 9



PRE-IMPOUNDMENT CONDITIONS
(PERIOD OF RECORD 1915-1949)

- -- -- POST-IMPOUNDMENT CONDITIONS
(PERIOD OF RECORD 1983-1973)

CHORDRUPE RIVER BOSIN, TEXAS

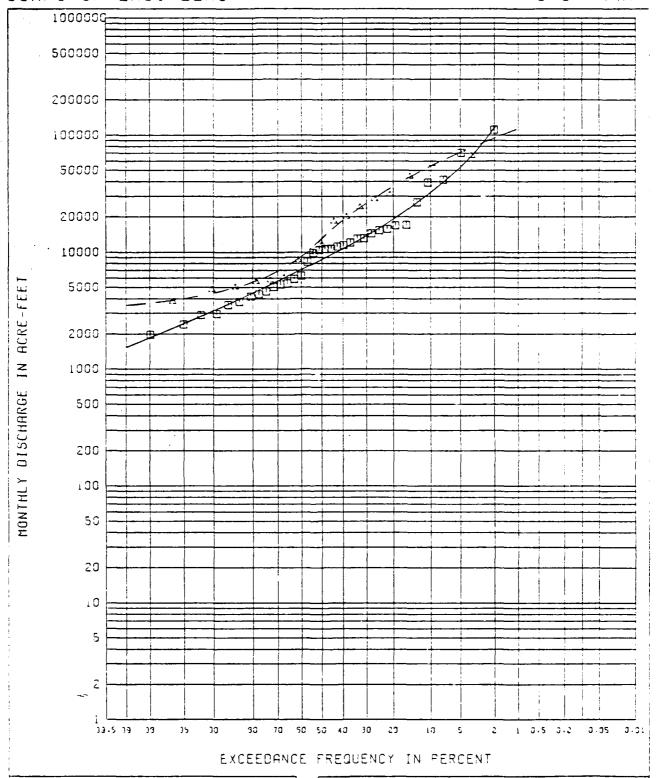
CANYON LAKE

DISCHARGE-FREQUENCY RELATIONS

AT DAM SITE

CCTOBER FLOWS

U.S. ARMY ENGINEER DISTRICT. FORT WORTH
TO ACCOMPANY INSTREAM FLOW PROBLEMS AND NEEDS
EVALUATION REPORT OF DECEMBER 1990
PLATE 10



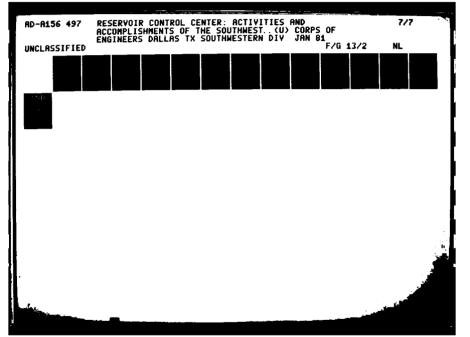
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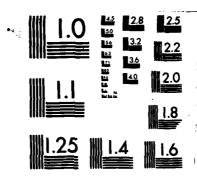
- — __ POST-IMPOUNDMENT CONDITIONS
(PERIOD OF RECORD 1953-1973)

CANYON LAKE
DISCHARGE-FREQUENCY RELATIONS
AT DAM SITE
NOVEMBER FLOWS

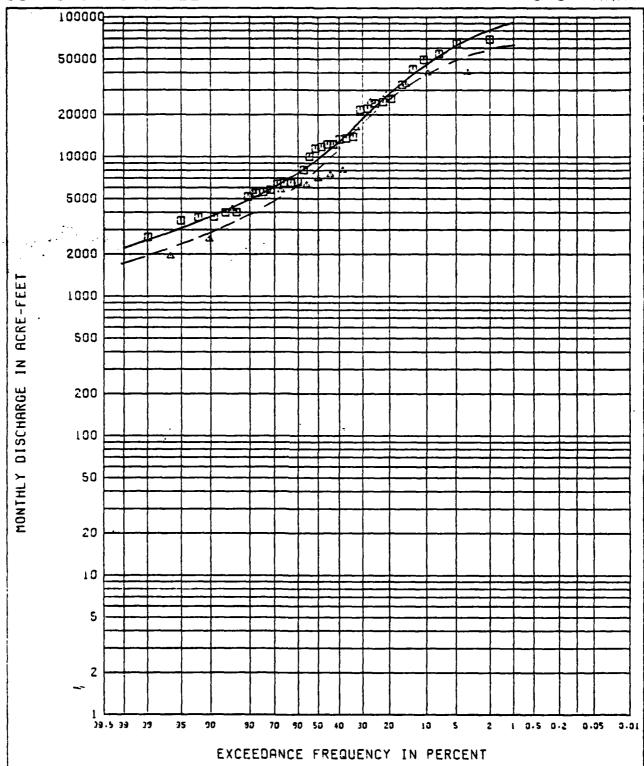
U.S. ARMY ENGINEER DISTRICT. FORT WORTH
TO ACCOMPANY INSTREAM FLOW PROBLEMS AND NEEDS
EVALUATION REPORT OF DECEMBER 1980

PLATE 11





MICROCOPY RESOLUTION TEST CHART NATIONAL BUREAU OF STANDARDS-1963-A



PRE-IMPOUNCHENT CONDITIONS
(PERIOD OF RECORD 1915-1949)

- -- POST-IMPOUNDMENT CONDITIONS
(PERIOD OF RECORD 1963-1979)

OURDRLUPE RIVER BASIN. TEXAS

CANYON LAKE

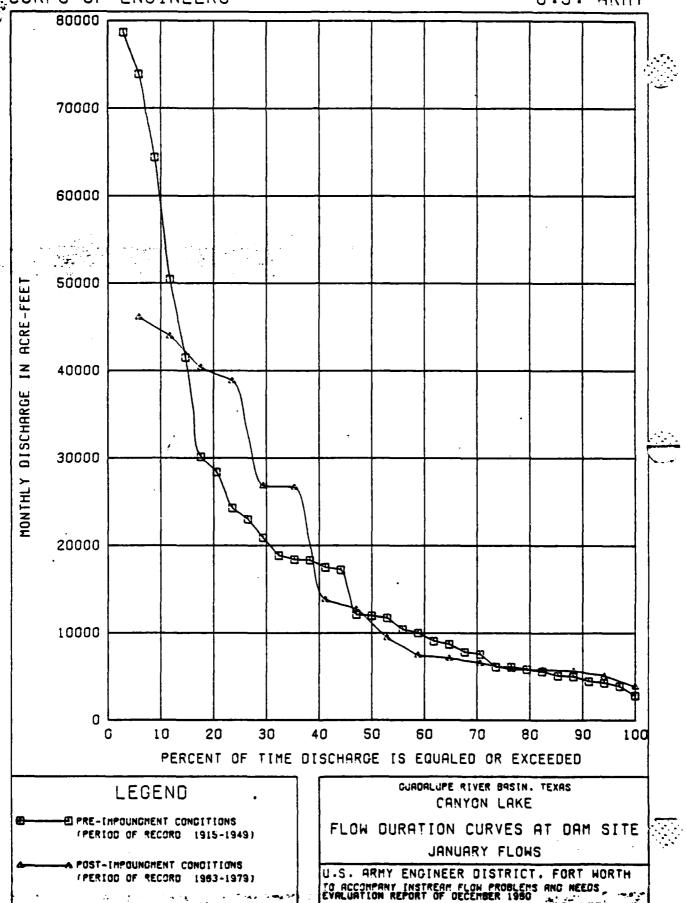
DISCHARGE-FREQUENCY RELATIONS
AT DAM SITE

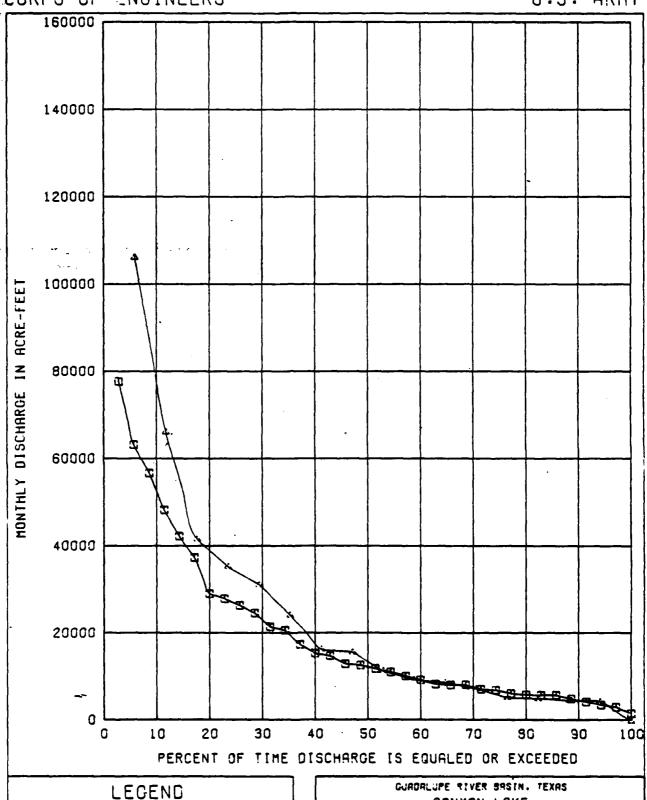
DECEMBER FLOWS

U.S. ARMY ENGINEER DISTRICT, FORT WORTH
TO ACCOMPANY INSTREAM FLOW PROBLEMS AND NEEDS
EVALUATION REPORT OF DECEMBER 1990
PLATE 12



U.S. ARMY



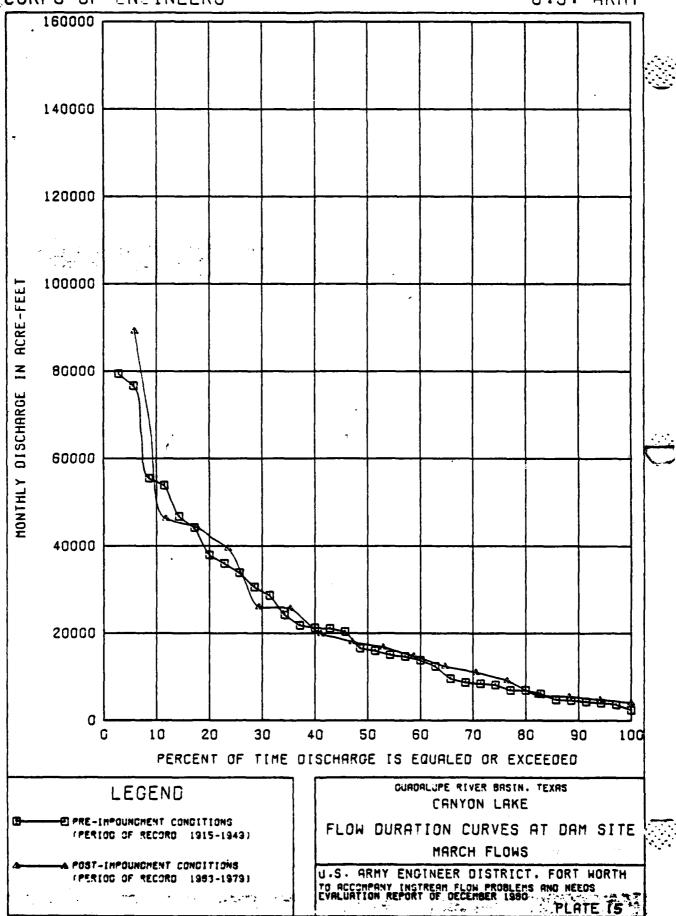


2 PRE-IMPOUNCHENT CONCITIONS (PERIOD OF RECORD 1915-1943)

L POST-IMPOUNCHENT CONCITIONS (PERIOD OF RECORD 1963-1979) CANYON LAKE

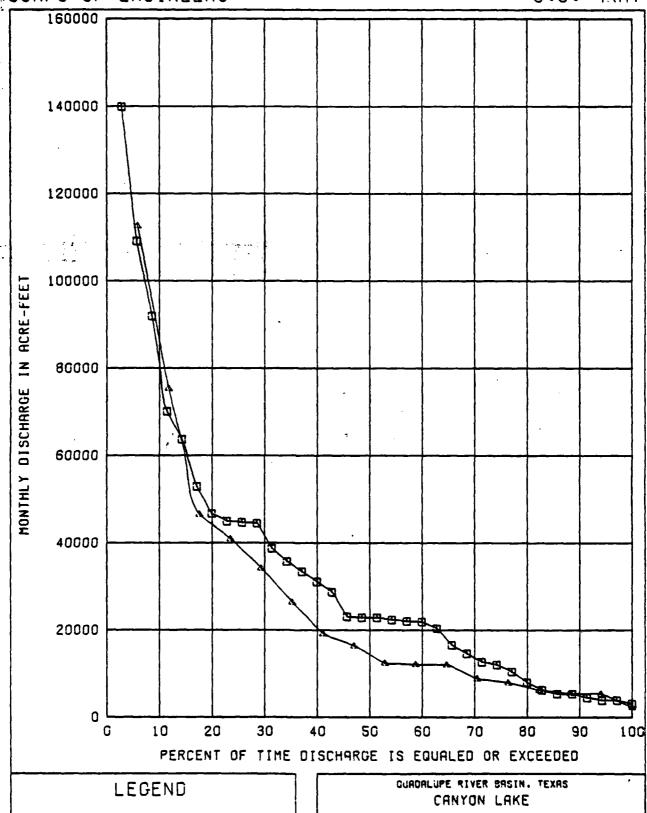
FLOW DURATION CURVES AT DAM SITE FEBRUARY FLOWS

U.S. ARMY ENGINEER DISTRICT. FORT WORTH PLATE 14





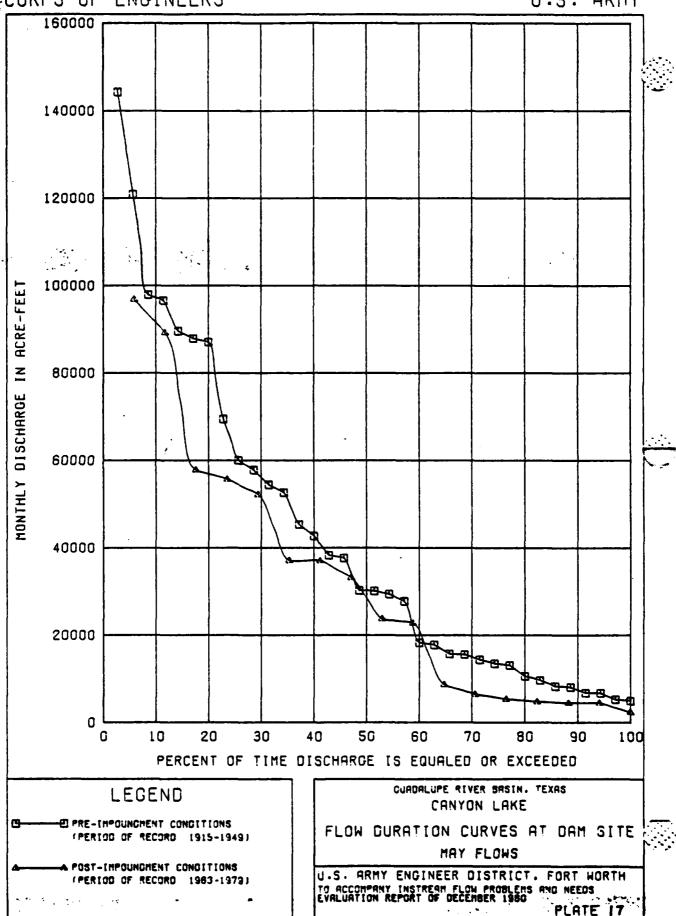
U.S. ARMY



ed pre-impoundment conditions (PERIOD OF RECORD 1915-1949)

POST-IMPOUNDMENT CONDITIONS (PERIOD OF RECORD 1983-1979) FLOW DURATION CURVES AT DAM SITE APRIL FLOWS

U.S. ARMY ENGINEER DISTRICT. FORT HORTH TO ACCOMPANY INSTREMM FLOW PROBLEMS AND NEEDS EVALUATION REPORT OF DECEMBER 1990 PLATE 16



PRE-IMPOUNDMENT CONDITIONS

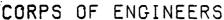
(PERIOD OF RECORD 1915-1949)

POST-IMPOUNDMENT CONDITIONS

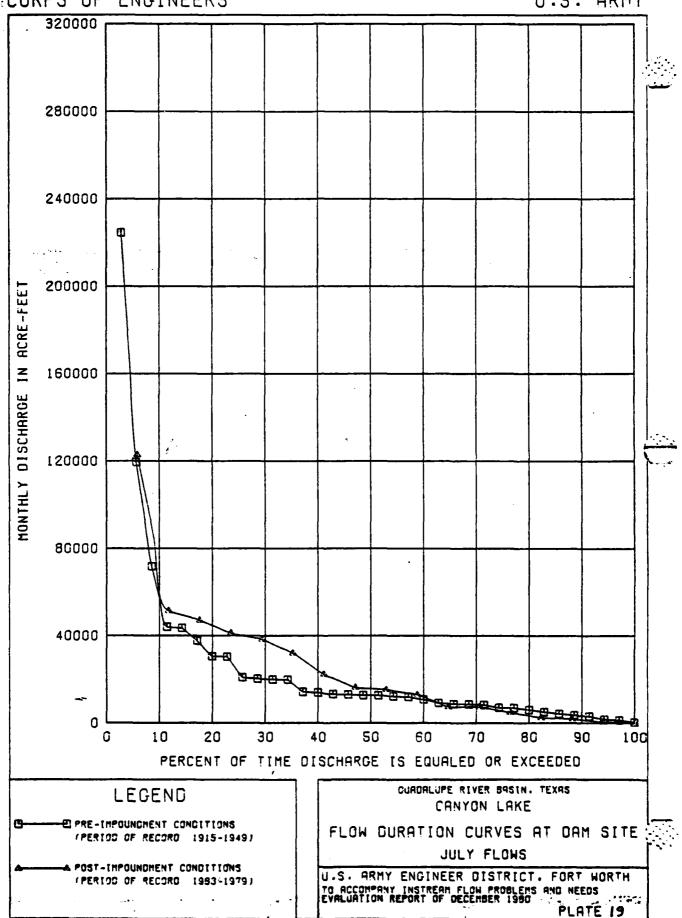
(PERIOD OF RECORD 1963-1979)

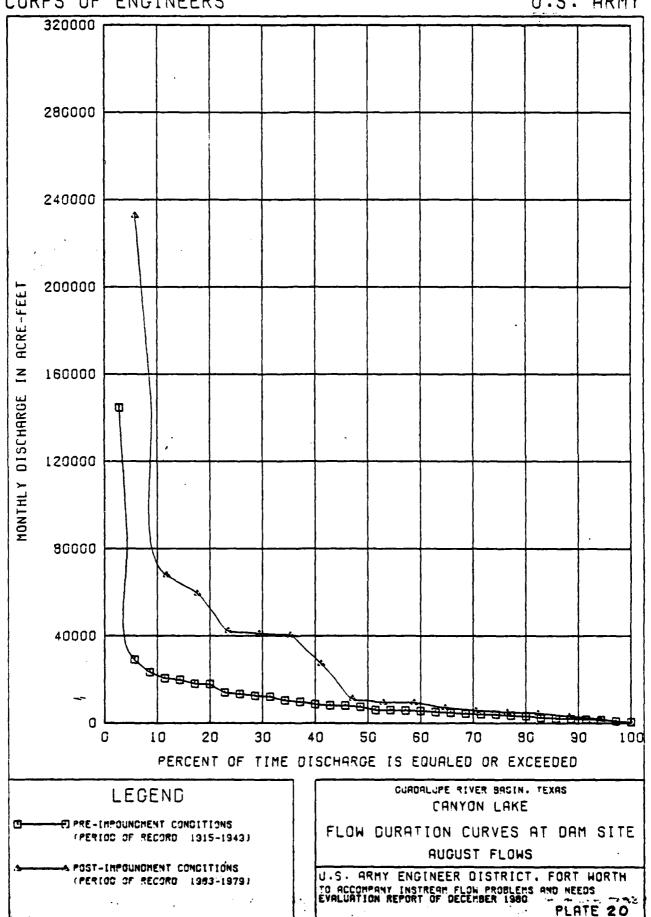
FLOW DURATION CURVES AT DAM SITE
JUNE FLOWS

U.S. ARMY ENGINEER DISTRICT. FORT WORTH TO ACCOMPANY INSTREAM FLOW PROBLEMS AND MEEDS EVALUATION REPORT OF DECEMBER 1990 PLATE 18

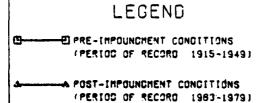


U.S. ARMY





PERCENT OF TIME DISCHARGE IS EQUALED OR EXCEEDED



CANYON LAKE

FLOW DURATION CURVES AT DAM SITE SEPTEMBER FLOWS

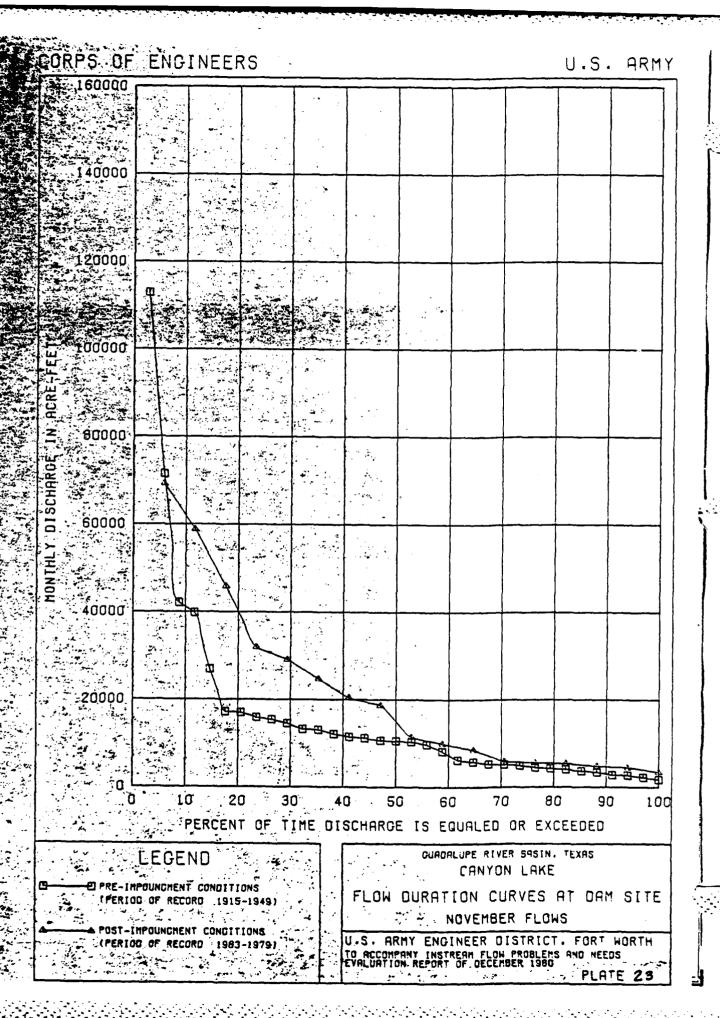
U.S. ARMY ENGINEER DISTRICT. FORT WORTH TO ACCOMPANY INSTREAM FLOW PROBLEMS AND MEEDS EVALUATION REPORT OF DECEMBER 1950 PLATE 21

U.S. ARMY ENGINEER DISTRICT. FORT WORTH

U.S. ARMY ENGINEER DISTRICT. TO ACCOMPANY INSTREAM FLOH PROBLEMS AND NEEDS EVALUATION REPORT OF DECEMBER 1980 -- PLATE 22

A POST-INPOUNGMENT CONDITIONS

(PERIOD OF RECORD 1963-1979)



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